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INTRODUCTION

1 The National Land Reserve is not only an important part of the economic and social life of the United States but also a resource reserve to meet the needs of present and future generations. In recent years their use for forestry, grazing, recreation, mineral production and other purposes has grown rapidly, and there is every reason to believe these lands will continue to increase in usefulness.

A part of this transformation is directly attributable to the spectacular increases in the population of our western states. Other strong influences have been the growth of national income and its distribution along with increasing amount os leisure for our citizens.

To meet present and future demands, management under the concept of balance usage must be intensified requiring increased input of capital to satisfy growing needs. Accomplishment in an orderly, systematic manner calls for a high degree of land and resource planning, and the system which has been recently developed by Bureau of Land Management is known as"Master Unit Classification". It has as its objective the analysis of the National Land Reserve to determine the ways and means such lands can make their maximum contribution to the national welfare. This requires systematic identification of areas of public lands and then as the public interest dictates, their designation for resource management or disposition by title transfer.

The success of the system depends on close coordination between range, forestry, lands and minerals in Oregon and Washington. Participation by district personnel is essential in both land analysis and action programs. Much of the work to date has already been performed by the districts.

This publication consists of the initial analysis of Master Units in Oregon and Washington. Additional analysis requires an inventory and economic evaluation of mineral resources, the study of which is now under way.

Bureau of Land Management
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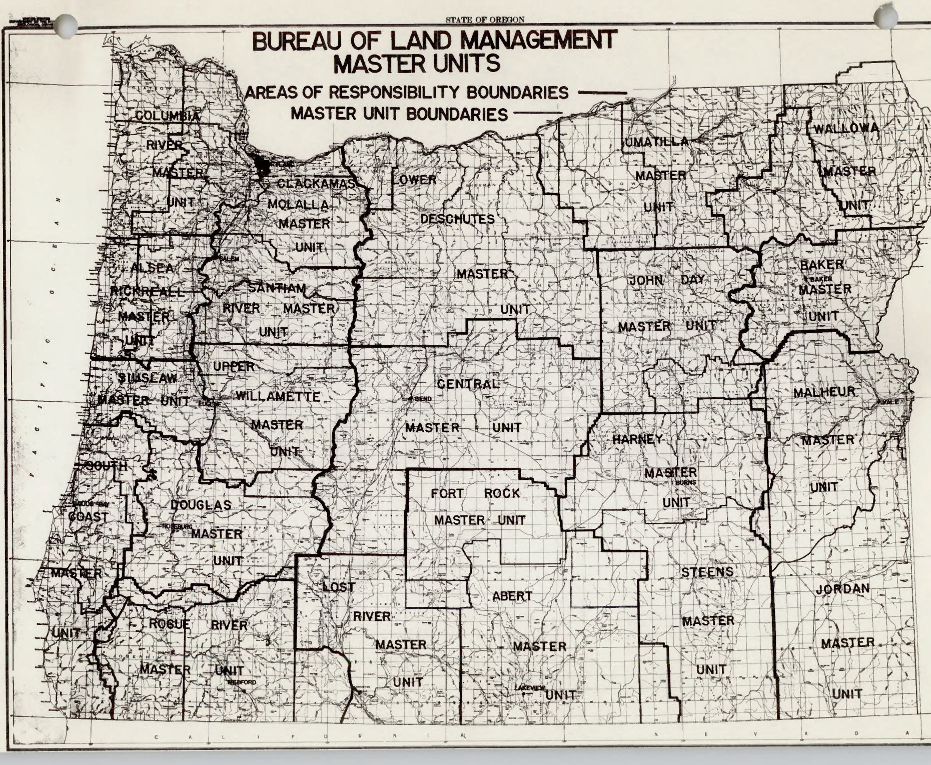
Planning areas have been tentatively identified and mapped. The
next step will be the analysis and collection of facts for each
2 planning area in the order of its designated priority (1) to
accomplish the objectives of the land moratorium and (2) to
stabilize land tenure and intensify balanced resource management
and (3) to control land case work.

LAND PLANNING MASTER UNITS

3

District	Master Units
Salem	Columbia River Alsea-Rickreall Clackamas - Molalla Santiam River
Eugene	Upper Willamette Siuslaw River
Roseburg	Douglas
Coos Bay	South Coast
Medford	Rogue River
Prineville	Lower Deshutes Central Oregon
Baker	Baker Wallowa Umatilla
Burns	John Day Harney Steens
Vale	Malheur River Jordan Valley
Lakeview	Lost River Fort Rock Abert Rim
Spokane	Western Washington Eastern Washington



BUREAU OF LAND MANAGEMENT MASTER UNITS

AREAS OF RESPONSIBILITY BOUNDARIES ———

MASTER UNIT BOUNDARIES ———

SALEM

COLUMBIA RIVER

MASTER UNIT CLASSIFICATION STUDY
Columbia Forest Management Area
Columbia River Master Unit

Initial Analysis

4

I. Location

The Columbia River Master Unit is situated in the Northwestern part of the State of Oregon encompassing all or most of the following counties: Columbia, Clatsop, Tillamook, Washington and Yamhill. Unit boundaries also include small portions of Lincoln, Polk and Multnomah Counties. The Unit is bounded on the West by the Pacific Ocean, on the North by the Columbia River, and on the East by the Willamette River. The Southern boundary delineates an administrative separation from the Alsea-Rickreall Master Unit.

II. Internal Physiographic Features and Climate

Generally the Columbia River Master Unit is mountainous with many coastal and intermountain valleys.

The Coast Range Mountains comprise the major land form influencing BLM lands in the Columbia River Master Unit. Several major drainages encompass large areas of BLM lands, namely the Nestucca, Trask, Wilson, Kilchis Rivers, all of which flow generally westward from the summit of the Coast Range, and the Yamhill River which flows east to the Willamette.

Elevations range from sea level to 3,450 feet, that being the elevation at Trask Lookout.

BLM lands within the master unit are generally mountainous, although somewhat less rough than the Cascades, and varying from gentle slopes to extremely steep areas.

Nearly all slopes are timber, although some rock outcrops occur particularly in the Grind Stone Mountain and Kilchis River areas.

There are few lakes of any size.

Forest soils of the Pacific northwest have not been closely studied, although they are a fundamental tree-producing factor. However, in regions where study has been carried out, soil characteristics have been found to exert a direct influence on tree growth.

Soils in the Columbia River Master Unit were developed under a costal climate with a moist winter and dry period in summer. These soils were derived largely from basaltic rocks by chemical processes of weathering. They are faintly to definitely acid and of a slightly heavy texture in most cases.

Virtually all of the BLM lands in the Columbia River Master unit are indicated

Arthur L. Burr
7/5/61

to be class VI e on the map accompanying station bulletin 530 published by the Oregon Agricultural Experiment Station in January 1953. Class VI e lands are described as well suited for grazing or forestry, not arable because of steep slopes, susceptibility to erosion or shallow soils.

Westerly winds predominate carrying the modifying effect of the ocean over the entire western part of Oregon.

According to Climate and Man, the 1941 yearbook of the U. S. Department of Agriculture, the period without killing frost for most of the Columbia River Master Unit varies from 160 days near Carlton to 260 days along the coast.

In general, precipitation increases from the coast to a belt near the summit of the Coast Range, thence decreases into the Willamette Valley.

The average annual precipitation ranges from 80 inches along the coast to 120 inches along a belt near the summit of the coast range to 50 inches in the Carlton area.

In general, less than two inches of rain falls in July and in August. Rainfall for June and September varies from one to four inches, and the wettest months are December, January and February. In summer there is abundant sunshine, but in winter there is much cloudiness.

In the coastal areas snow seldom falls, and when it does it melts almost at once. The average annual snowfall ranges from less than one inch along the coast to many feet in the mountainous areas.

Humidity is usually high in the winter and throughout the year, however east winds occasionally bring very low humidity, this occuring sometimes even during the winter.

Strong southerly winds are an occassional feature of winter weather and sometimes are destructive to the extent to causing considerable damage to the forest.

January temperatures average about 40° F., while those for July average about 62° F.

III. Social Factors

The population of the Columbia River Master Unit is both urban and rural. The city of Portland in the North-East corner of the unit contains nearly a half million people and another 200,000 are distributed throughout the smaller towns and rural areas. Recent census figures indicate that the population of Portland has remained quite static during the past decade while outlying cities and towns, Portland's so-called "bedroom areas", have grown tremendously.

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III. Social Patterns

The population of the Columbia River Master Unit is both urban and rural. The city of Portland in the Northeast corner of the unit embraces nearly a half million people and another 200,000 are distributed throughout the smaller towns and rural areas. Recent census figures indicate that the population of Portland has remained quite static during the past decade while outlying cities and towns, Portland's so-called "bedroom areas", have grown tremendously.

6 Outside of the major municipalities, there has been a perceptible trend from rural to urban and suburban residence. A recession in the agricultural economy in recent years has resulted in consolidation of farm lands into fewer but more economic units. The persons thus displaced were frequently older people who simply retired. Others have largely been absorbed into expanding industrial areas without causing serious unemployment.

Consolidation of ownership has also been significant within the timber and forest products industries. Pulp companies such as Crown-Zellerbach, Publishers' Paper Co. and Longview Fibre Co. have been engaging in vigorous land acquisition programs involving mainly cut-over forest lands and submarginal farm land. Manufacturing facilities have also been subject to consolidation as many inefficient or poorly integrated operations succumbed to depressed lumber and forest products markets. This has resulted, locally, in some hardship but for the most part it has been offset by increased activities in other areas.

One relatively dark spot in future prospects for property in the Columbia River Master Unit is Tillamook County. Here lumber and plywood manufacturing facilities have been greatly over stimulated by the need to salvage dead timber from the Tillamook burn before it was lost to insects and decay. Now that the burn timber is largely harvested, manufacturing facilities are without sufficient raw material to sustain their installed capacity. Some large mills, in fact, are without any future prospects whatsoever. In general, the future economy of the area is dependent upon an orderly adjustment to sustained yield capacities and a vigorous program to stimulate new industry.

Winter unemployment in rural areas and smaller towns of the unit is almost always high due to the seasonal nature of farm and woods work. This creates no particular hardship due to the fact that the people involved have pretty much adjusted to it. Logging wages, in particular, are high resulting in reasonably good income even with three or four months of unemployment. Many loggers spend their off months tending small farms where even if little additional income is provided, living costs are certainly low. The blow of seasonal unemployment for many is also softened by extremely generous unemployment benefits under Oregon law.

Much of the highly seasonal employment afforded by the harvest of food crops from rich Willamette Valley farm lands is filled by migrant workers who return for winter work to California.

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TABLE I

Community	Sawmills		Plywood-Veneer		Remanufacture	Other Woodworking
	No.	Annual Capacity	No.	Annual Capacity	Number	Number
Beaver	2	3,280 M bd.ft.				
Buxton	3	5,400 M bd.ft.				
Carlton	2	75,569 M bd.ft.				
Cherry Grove	2	25,000 M bd.ft.				
Cornelius & North Plains	4	21,400 M bd.ft.				
Forest Grove	3	70,642 M bd.ft.	1	90 MM sq. ft.	1	2
Garibaldi			1	84 MM sq. ft.		
Gaston	4	18,640 M bd.ft.				
Grand Ronde	2	6,110 M bd.ft.				
Hillsboro	4	9,464 M bd. ft.				
Lee's Camp	1	25,000 M bd.ft.			1	
McMinnville	6	18,560 M bd.ft.	2	4.2 MM sq. ft.	2	
Newberg	2	10,520 M bd.ft.				
Portland	10	157,349 M bd.ft.	5	26 MM sq. ft.	2	7
Rainier	4	83,479 M bd.ft.				
Salem	3	27,600 M bd.ft.			2	1
Scappoose	2	9,000 M bd.ft.			1	
Sheridan	2	11,710 M bd.ft.				
St. Helens	1	80,696 M bd.ft.	1	7 MM sq. ft.		
Tillamook	7	79,418 M bd.ft.	2	12 MM sq. ft.	3	
Vernonia	3	83,485 M bd.ft.				
Willamina	6	44,088 M bd.ft.	1	7 MM sq. ft.	1	
Yamhill	2	4,895 M bd.ft.				

IV. General Economic Factors

Harvest and manufacture of forest products, agriculture, commercial fishing, tourist trade and secondary manufacturing of many kinds all contribute to the economy of the area as does canning and packing, rail and ocean shipping and a multitude of retail businesses. Outside of Portland, lumbering and farming are doubtless of primary importance and many of the smaller communities are almost wholly dependent upon one or the other.

FOREST PRODUCTS INDUSTRY

Sawmilling is by far the most important forest manufacturing industry represented in the Columbia River Master Unit. Sawmills range in size from those with annual capacity ratings of 70 MM bd. ft. to small cant mills operating only during periods of favorable market conditions.

Plywood mills are becoming an increasingly important part of the wood utilization industry in the master unit as new mills are constructed every year and existing mills are expanding.

The pulp industry is a large reliable user of forest products and although the long range trend anticipates expansion of pulp and paper facilities, expansion is not expected to greatly influence markets in the master unit in the immediate future.

Annual community manufacturing capacities of forest products are shown on Table I.

The utilization centers normally receiving the largest portion of timber from BLM lands in the Columbia River Master Unit are Portland, Carlton, Tillamook and Willamina.

The potential manufacturing capacity depends of markets and supply of raw materials.

The recent report prepared for Weyerhaeuser Timber Co. by the Stanford Research Institute indicates that a moderate to major increase in demand for wood products will exist through the year 1975.

Because of the emphasis now placed on greater utilization and better forestry practices including thinning, newer and more accurate inventories and reforestation, it is anticipated that the supply of raw products will steadily increase.

Because an increase in the market is anticipated with a parallel increase in the supply of raw materials and because of the proximity of the master unit to ample rail and ocean shipping facilities, it may be assumed that the potential for expanding manufacturing facilities does indeed exist.

AGRICULTURE

The Eastern part of the master unit encompasses the rich alluvial plains of the Willamette River valley. Here soil and climate combine to produce ideal conditions for the growing of cereal and small grains, fruits, nuts, berries, hops, beans and some root crops. The topography of these lands is gentle to moderately rolling and the soil varies from silt to clay loam.

West of the Coast Range the Kilchis, Wilson, Trask and Nestucca Rivers flow to the sea in and near Tillamook. Here these rivers have formed a joint delta composed of rich deposites of aluminum. A mild climate and high rainfall produce excellent year around pasture permitting the development of a thriving dairy industry.

RANGE LIVESTOCK

The raising of range livestock has never reached major proportions due to the fact that nearly all lands are best suited for some higher use. Presently, grazing is largely confined to privately held cut-over forest and abandoned farm land.

RECREATION

Recreation use of lands within the master unit is high due to many natural attractions and proximity to populous areas. Mountains, streams and sea shore provide considerable opportunity for fishing, hunting, camping, picnicking and so forth. Good roads emanating from Portland traverse the area and many tourists pass through each year along the Pacific Highway, U.S. 101. Without doubt, recreation use in the future will increase many fold as will need for recreation development.

MINING

Lumonite iron ore deposits occur within basalt formations in Columbia County and a small quantity is mined near Scappoose for paint pigment. Ferruginous bauxite is found in several northwestern counties of Oregon including Washington and Columbia. Although there is no mining activity involving this mineral, there has been extensive exploration resulting in over 300 mining claims on Bureau of Land Management administered lands.

There is apparently no present economic use for these minerals except the limited operation at Scappoose. Future use is difficult to estimate inasmuch as it is dependent on economic conditions, demand and location of other sources of these minerals.

TRANSPORTATION

An excellent primary and secondary road system exists in the Columbia River Master Unit. U. S. Highways 99 W and 101 cross the area North and South while Highways 30 and 26 run East and West. State Highways 18, 22 and 47 complete the primary net. In addition, most agricultural lands are served by numerous surfaced market roads. Logging roads on private lands are also numerous but are largely unsurfaced.

Railroad transportation facilities serve limited areas in the Columbia River Master Unit. The McMinnville, Carlton, Forest Grove area is served by the Oregon Electric Railroad and the Vernonia and Tillamook areas are served by the Southern Pacific Railroad.

The Willamette and Columbia rivers form an intergal part in the transportation of logs to primary manufacturing centers. Many log dumps are present on both rivers. Rafts are formed at the dumps and pulled by tugs to the mill.

Portland and surrounding areas on the Willamette and Columbia rivers provide facilities from which large amounts of lumber and other products are loaded on vessels for ocean transport.

ENERGY SYSTEMS

Both public and private electric power serves the Columbia River Master Unit. The area is largely covered by Portland General Electric Company, a private firm, while a number of communities have formed their own utility districts, purchasing and distributing Bonneville power. Rates are among the lowest in the nation.

There is, at present, no electric power generated within the unit. The Tillamook P. U. D. is, however, studying plans to build a dam and power plant on the Trask River.

Considering the heated political nature of private versus public power, it is difficult to assess the course of future development in this field.

Natural gas has been brought to the area within the past decade and now serves many users. For the most part, however, it is no more than competitive with oil which is distributed economically in the area due to low cost water transportation.

WATER

Although the unit is characterized by rather high rainfall, periods of great water use and low runn off during the latter months of the summer do result in shortages. A number of communities experience inadequate water supplies for domestic purposes and irrigation is sharply curtailed. It is evident that this problem can only be solved by increased water impoundment which surely will be developed as conditions become more crucial.

Most streams and rivers originating in the Coast Range are characterized by rapid descent until the flat alluvial plains are reached. For this reason, few large impoundment sites exist. While a number of small dams can be constructed to assist irrigation and domestic supplies, hydroelectric development is definitely restricted.

Much low lying land near major water sources suffers from periodic flooding or poor drainage. Thousands of acres of such land have been reclaimed through the formation of private drainage and diking districts.

PUBLIC WORKS PROJECTS

The Bureau of Reclamation has a large water impoundment project in the Tualatin drainage of Washington County under advanced study. A proposed dam, to be situated on Scoggin's Creek will provide municipal and industrial water for the communities of Forest Grove, Beaverton, Hillsboro, Oswego and Tigard. This project will involve impoundment of some 46,000 acre-feet of water and will bring some 17,000 acres under irrigation.

Considerable channel work along the Columbia and Willamette Rivers has been done by the Corps of Engineers as well as harbor development along the Coast. Undoubtedly maintenance and future projects of this sort can be expected.

Outside of Portland, there are few military installations of any size. The Air Force maintains a radar station on Mount Hebo south of Tillamook. Tongue Point Naval Station near Astoria is slated for closure next year. There are a number of small Coast Guard facilities along the coast.

LABOR UNIONS AND FARM COOPERATIVES

Nearly all industrial operations, including sawmilling, are unionized to some extent. Many large lumber and pulp companies avoid union contact in woods work by sub-contracting or "gypoing". Strikes are not uncommon upon termination of union contracts. The Industrial Forestry Association and Western Forest Industries Association are active representatives of management in the forest products industry.

Several large organizations vie for farmer representation in the area. They frequently oppose one another, particularly on legislation, thus weakening the position of the farmers they represent.

LOCAL PUBLIC INSTITUTIONS

Other than primary and secondary schools, the only state-supported public institutions within the unit are Portland State College and the medical and dental departments of the University of Oregon. In addition, the following independent colleges and professional schools are recognized

During [illegible]

Each [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Other than primary and secondary schools, the [illegible] state-supported public [illegible]

12

by the State Superintendant of Public Instruction:

Cascade College	Portland
George Fox College	Newberg
Lewis and Clark College	Portland
Linfield College	McMinnville
Multnomah College	Portland
Pacific University	Forest Grove
Portland School of Music	Portland
Reed College	Portland
University of Portland	Portland

V. The lands

Federal jurisdiction in this master unit is divided between National Forest and BLM administered lands. The State of Oregon also manages a vast acreage, mostly within the Tillamook Burn.

Forest Service lands are all situated within the Siuslaw National Forest forming a fairly contiguous block in the southwestern part of Tillamook County.

BLM administered lands are of two types: Revested Oregon and California Railroad Grant lands (O&C) and Public Domain lands. The majority of the 98,228 acres (P.L.S.) of O&C lands in the unit are situated immediately south and east of the Tillamook Burn in Tillamook and Yamhill Counties. There is also considerable O&C land in eastern Columbia and Washington Counties. Some 85% of the unit's 28,247 acres of Public Domain lands are situated within Tillamook County, the majority of which constitutes a fairly contiguous block immediately north and east of the City of Tillamook.

Private forest lands in the Columbia River Master Unit are largely in the hands of pulp companies; namely, Crown-Zellerbach Corp., Spaulding Pulp and Paper Co., Longview Fibre Co., Publishers' Paper Company and Columbia River Paper Co. Also, Willamette Valley Lumber Co. has extensive holdings in northwestern Yamhill County.

Considerable BLM land is under power site withdrawal. However, for reasons previously stated, few large scale power developments are anticipated. Several counties have effected recreation withdrawals on BLM lands. Now that BLM has actively entered the recreation development field, it is anticipated that most counties will happily abandon their claims in favor of BLM development.

There are no national parks in the Columbia River Master Unit.

USE AND DEMAND FOR BLM LAND

Most BLM lands within the unit are best suited for timber production. Douglas-fir is the predominant commercial timber species with components of Western hemlock Western red cedar, Grand fir, and Sitka spruce. There

13

are occasional pure stands of Western hemlock. Concentrations of Pacific silver fir and Noble fir are sometimes present at high elevations. Hardwood stands are comprised largely of Red Alder often associated with Bigleaf Maple. These are most extensive near the coast. Lack of a consistant market has been a deterrent to optimum management of hardwoods.

Because of extensive forest fires and failure of logged areas to reforest naturally, a sizeable acreage of nonstocked forest land exist. However, starting with the first significant reforestation effort in 1953 when 1,000 acres of the Tillamook burn were planted, an expanding reforestation program has served significantly to reducte the acreage of nonstocked lands.

At this writing, mature timber (90 years and older) occupies 7,604 acres of O&C land and 798 acres of Public Domain. Based on the current inventory and declared allowable cut, the supply of presently mature timber on O&C lands will be exhausted in 1970 (Public Domain - 1962).

The Columbia River Master Unit will be the first area in the Salem district to attain full second growth management status. Excellent thinning opportunities exist with many acres of 50, 60, and 70 year old, well-stocked second growth stands occuring on high site lands of moderate topography.

The two major obstacles to effective forest management on BLM lands within the unit have been and continue to be lack of access and inadequate surveys. Two major right-of-way agreements, one with the State of Oregon and the other with Willamette Valley Lumber Co. have proved to be big steps toward gaining adequate access but they are only steps. Lack of well defined property lines and corners is becoming more serious each year.

The many mining claims in Columbia and Washington Counties are also proving to be a deterrent to effective management. However, field examination under Public Law 167 has recently been completed which, it is anticipated, will result in many invalidations. There is the ever present possibility that local reduction plants may be constructed that will make mining of local iron and bauxite deposits profitable. Such developments could have a disastrous effect on the future use of mined lands.

Fire protection on BLM lands within the unit is presently contracted to the State of Oregon.

To illustrate the significance of BLM lands to the local economy, the following passage from a recent report on classification of Public Domain lands is quoted:

> "In analyzing the economic importance of Public Domain lands here involved, it should be noted that approximately 85% of these lands are so situated that they are most reasonably tributary to manufacturing plants in the Tillamook area. As

> such, they are extremely important to the local economy. To realize just how important, a little background information is desirable.
>
> Historically, two industries form the basic support of Tillamook and surrounding communities; namely, lumbering and dairying. As the latter industry became limited by total utilization of narrow river bottoms and flood plains, logging and manufacturing of forest products became the most logical area for continued growth. Had it not been for the conflagrations that ravaged much of the timber resources of the area in 1933 and succeeding years, a reasonable growth rate in forest industries might have been achieved with a leveling out as a sustained yield limitation was reached.
>
> Because thousands of acres of burned timber had to be quickly utilized before it was lost to decay and insects, logging and milling operations were put into high gear. Investments were keyed to fast write offs and cut-over lands were largely let go for taxes. As burned timber became depleted, an over stimulated industry quickly moved into what was left of the thin fringe of green timber bordering the burn.
>
> Today, the lumbering industry of Tillamook County is almost wholly dependent on publicly owned timber. While it is impossible for Federal and State forests to supply an installed capacity capable of utilizing 150 to 200 million board feet per year, it is possible to prevent complete collapse of the largely timber-based Tillamook economy. Regulated cutting based on sustained yield can present a stimulus to long term investment and increased utilization. This together with a measure of diversification, could literally 'save' Tillamook."

Other communities such as Willamina, Carlton and Forest Grove are similarly affected although perhaps less dramatically.

Agriculture and grazing constitute a very minor use of BLM lands. Although six grazing leases cover 21,241 acres of land, there are probably less than 300 acres of bona-fide grazing land within the unit and there are no existing agricultural permits. Forage value of much of the acreage on which grazing is now permitted is questionable and when the reforestation program succeeds in restoring growing trees to non-stocked lands, the mountain meadow type pasture is expected to be the only type of land under grazing lease.

Another valuable resource is water. The current value of BLM lands for water supply is evidenced by noting that they fall within the watersheds of the cities of Scappoose, Yamhill, McMinnville, Carlton and Hillsboro.

BLM lands offer many attractions for recreationists and such use is becoming ever more popular. East of the Coast Range summit numerous rivers and streams provide some of the best sea-run trout, salmon and steelhead fishing in the state. Indiscriminent logging of the timber covering the drainage areas of these streams could seriously affect this sport. Deer and elk hunting is both popular and productive on these lands. The Kilchis River Public Domain lands, in particular, are known for the large elk population they support and O&C lands within the Tillamook Burn afford exceptional deer hunting. Some tracts are situated on or adjacent to the coast and offer considerable potential for recreational development. Sand dunes, shore pine, and rugged topography are combined to present scenes of spectacular beauty. A few of these tracts may be suitable for independent development while others more logically should be handled in association with adjacent lands.

Proximity to the Portland area by modern highway and increasing coastal travel contribute in large measure to the high recreation use this area sustains. Population pressures and further improved travel will doubtless expand such use tremendously.

Several BLM recreation developments are now either under way or definitely scheduled. These are adjacent to the scenic Nestucca River Access Road. A number of other projects are also planned.

OTHER CONSIDERATIONS

While they are essentially very valuable from the several standpoints described, these lands also present the forest manager with some serious and perplexing problems. Coastal timber types, although typically offering high potential for timber production, are extremely prone to be taken over by brush and inferior species. Great care must be taken in forestry operations to prevent this. Long range objectives must often take precedence over current desires for once the less desired vegetation dominates the site, costly corrective measures are needed.

Much of the BLM land within the Columbia River Master Unit is presently producing at far below capacity due, largely, to natural factors that allowed brush take-over. An imaginative campaign must be mapped out and considerable money spent to bring this land into full production.

Another factor of no little importance is topography. Much of these lands are typified by sharp steep ridges and plunging water courses making road development a very expensive and difficult proposition. In addition, high rainfall necessitates the surfacing of nearly all roads. These costs coupled with a preponderance of immature timber often prevent, from an [illegible] valuable resource is [illegible] watershed value of BLM lands for water supply is evidenced by noting that they fall within the watersheds of the cities of [illegible], [illegible], [illegible], [illegible] and [illegible].

BLM lands offer many attractions for the outdoor enthusiast and such use is becoming ever more popular. Most of the [illegible] lands [illegible] attractive rivers and streams [illegible] support the [illegible] and steelhead fishing in the state. [illegible] of the [illegible] covering the drainage areas of these streams would [illegible] affect [illegible]. Deer and elk hunting is both popular and productive on these lands. The [illegible] River Public Domain lands, in particular, are [illegible] by the large city population that support and use [illegible] lands within the [illegible] offers exceptional deer hunting. Some tracts are [illegible] adjacent to the coast and offer [illegible] potential for recreational development. Sand dunes, rocky shores, and rugged topography are combined to present scenes of spectacular beauty. [illegible] of these tracts may be suitable for independent development while others more logically should be handled in association with [illegible] lands.

Proximity to the heavily [illegible] area [illegible] and increasing general travel contributes in large measure to the high recreation use this area receives. Population pressures and further improved travel will undoubtedly expand such use tremendously.

Several [illegible] recreation developments are now being [illegible] or tentatively scheduled. These are planned in the South [illegible] River [illegible] Road. A number of other projects are also planned.

[illegible]

While they are commercially very valuable from the forest management standpoint, these lands also present the forest manager with some serious and perplexing problems. Conifer timber types, although typically offering high potential for timber production, are extremely prone to be taken over by brush and inferior species. [illegible] forestry operations to [illegible]. [illegible] these areas [illegible] the less desired vegetation dominates the site, costly corrective measures are needed.

Much of the BLM land within the [illegible] River [illegible] unit is presently producing at far below capacity due largely to natural factors that allowed brush takeover. An [illegible] program would be [illegible] and considerable money spent to bring this land into full production.

Another factor of no little importance is topography. Much of these lands are typified by steep, rocky ridges and plunging water courses making road development a very expensive and difficult proposition. In addition, high rainfall necessitates the surfacing of nearly all roads. These costs coupled with a [illegible] of [illegible] timber often presents [illegible] economic standpoint, a road development that can be written off on a current basis. The Government can, however, appropriate funds for road construction that can be recovered as immature stands reach harvest age.

In short, much of Columbia River Master Unit land is coastal forest land; as such, it demands intensive management to insure perpetuation of and/or conversion to desirable timber species. This, in turn, necessitates considerable capital outlay for pre-roading, stand and site improvement, reforestation, etc. Private owners may not be inclined or able to make such investments that must be carried for a considerable length of time. Also, the Government stands to lose considerable investment if developed lands cannot be retained. Clearly, if we are to manage these lands, we must have reasonable assurance that they are to remain in public ownership.

CONCLUSIONS

1. BLM lands within the Columbia River Master Unit are best suited, with few exceptions, primarily to timber production.

2. Secondary uses such as recreation and watershed, are highly significant and can be expected to become more so.

3. The economy of many communities within the area is directly affected by the management of these lands.

4. Heavy investments needed to bring BLM lands into full production are justified only if tenure is guaranteed.

5. Hoped for exchanges with the State of Oregon, Crown Zellerbach Corp. and others would do much to simplify management of these lands.

6. Continued balanced use management by BLM will materially assist the economy of the area.

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ALSEA-RICKREALL

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MASTER UNIT CLASSIFICATION STUDY
Alsea and Rickreall Forest Management Areas
Alsea-Rickreall Master Unit

I. Location

The Southwest Administrative Unit of the Salem Forest District comprises the Alsea and Rickreall Forest Management Areas, which on a combined basis, form the Alsea-Rickreall Master Unit. Historically, the initial Master Unit was established in the years 1946 and 1947 when all O&C lands were subdivided into local sustained yield areas, each with an appurtenant marketing area, designed to contribute to the economic stability of the local communities.

The Willamette River in the east and the Pacific Ocean in the west form natural physical boundaries to the Alsea-Rickreall Master Unit. Administrative boundaries delineate the north and south borders; the Northwest Unit, Salem District and the Eugene District respectively. The Master Unit includes Benton County in entirety and portions of Lincoln, Polk, and Lane Counties.

II. Internal Physiographical Features and Climate

The Coast Range Mountains bisect the Alsea-Rickreall Master Unit, thus creating two main drainage patterns that flow westerly to the Pacific Ocean and easterly to the Willamette River. The elevation of the land ranges from sea level to 4,097 feet, which is the elevation of Marys Peak, the highest mountain in the Coast Range. The National Land Reserve lands are generally located at elevations from 500 to 2,000 feet.

The nature of the terrain varies from the flat and rolling agricultural areas of the Willamette Valley in the extreme eastern portion to the mountainous regions, sharply and irregularly cut up by drainages, which generally characterize this unit.

The Siletz, Yaquina, and Alsea, which flow into the Pacific Ocean, are the major rivers that traverse this unit. Devils Lake, on the coast, is the only natural lake of any significance, and only the Valsetz Lake, which serves as a mill pond for Boise-Cascade Lumber Company, is sizeable among the artificial lakes.

The preponderant soils are heavy with a large percentage of clay with the exception of the rich fertile loams and sandy soils found in the Willamette Valley. The parent soil material varies considerably from sedimentary rock, to metamorphic rock, to igneous extrusions.

The annual precipitation, mostly in the form of rain, varies from 40 to 75 inches, however, the town of Valsetz is considered one of the wettest areas in the nation with an annual precipitation of approximately 135 inches. The period without a killing frost, for most of the unit, varies

Karl Bergsvik
July 5, 1961

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from 160 to 190 days. In general, less than an inch of rain falls in July and August. Rainfall for June through September varies from one to three inches. The wettest months are November, December and January.

January temperatures average about 40° F, while those for July average 62° F.

III. Social Factors

The estimated population, based on the 1960 census, of the Alsea-Rickreall Master Unit is 88,300 people, of which 60% represents the urban population. Due to the increase in the size of the farms and technological progress in agricultural methods and machinery there has and continues to be a decided trend in population shifts from the rural to the urban areas. The population is primarily located in the area adjacent to the Willamette River and secondly in the strip along the coast. The vast area between these two strips is comparatively devoid of inhabitants.

There are three towns which contain a population of over 5,000 people located within the boundaries of this unit. The City of Salem (pop. 49,000) is immediately adjacent to the unit and a portion of its residential district is located in the unit. The city of Eugene (pop. 60,000) is only 40 miles distant from the most southernmost portion of the unit.

A population increase of approximately 8% has occurred in the past 10 years however the increase can be attributed to the population growth in the larger towns and cities.

The population is comprised primarily of individuals of northern European extraction, however, the descendants are generally third and fourth generations removed. The total non-Caucasian population is less than one percent and consists mainly of individuals from the various Indian tribes found in the general area.

There is a tremendous influx of migrant workers in the summer months to harvest the crops in the Willamette Valley. Employment is at a yearly high during this period since the harvest of timber, as well as agricultural crops are in full swing. During the winter months, December through April, both of these industries slack off and as a result, normal seasonal unemployment results. Poor market conditions for these products also have a direct influence on general unemployment.

IV. General Economic Factors

The economy of the people and communities located within or adjacent to this unit are directly dependent upon the logging and lumber industries, which rank first in this area as well as the state. Agriculture is second in importance, followed by recreation. The unit can be segmentized to correlate geographic areas to the leading industries; agriculture - eastern portion; recreation - coastal area; and logging and lumber - central area.

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Agriculture

Agriculture in the Willamette Valley is of an extreme diversity which benefits from an eight month growing season. The average farm is approximately 100 acres in size and harvests such field crops as wheat, oats, barley, corn and alfalfa. In the horticultural field, tree fruits and nuts include cherries, apples, pears, peaches, plums, filberts and walnuts. Truck crops center around beans, corn, onions, beets, carrots and others. Small fruits such as strawberries, gooseberries, blueberries and blackberries help to make this crop one of the more valuable crops grown in the area.

Livestock is limited primarily to farm pastures and, with minor exceptions, should not be considered as stock raising characteristic to the range country of eastern Oregon. Dairy stock, beef cattle, sheep and poultry comprise this activity.

The Willamette Valley is one of the richest agricultural valleys in the Pacific Northwest if not in the Western United States.

Forest Products

There are approximately 55 sawmills located within the confines of the Alsea-Rickreall Master Unit and approximately 54 in the adjacent area which are dependent to varying degrees upon the harvest of timber in this unit. There are 15 plywood or veneer plants, 23 woodworking plants and 5 remanufacturing plants in the unit and 17, 29 and 15, respectively, adjacent to it. In addition there are three pulp and paper plants within or adjacent to this unit. It is estimated that the annual sawmill capacity exceeds 965 million board feet and that the annual plywood and veneer capacity exceeds 1 billion square feet. With the installed sawmill and plywood-veneer capacity so large, it is unlikely that there will be any further expansion in that direction. On the contrary, it can be expected that the number of smaller and marginal sawmill operations will be reduced in line with a reduction in the availability of timber to the smaller operators. It is probable however, that development and expansion will continue in industries such as pulp and paper, wood chip and particle board, bark derivatives and hardwood utilization. The high overhead cost inherent to these processes will result in the larger corporation dominating the market and a subsequent reduction in the smaller operations.

In the past, private lands in this unit have undergone a policy of clear cutting with little thought given to the perpetration of commercial timber through sound forest management practices, consequently the amount of privately owned timber available for cutting has rapidly dwindled with the exception of the holdings of the larger companies such as Boise-Cascade, Crown-Zellerbach, Columbia River Pulp and Paper and Willamette Valley Lumber Company. The smaller holdings of private companies and individuals have in the main been logged in the past. As a result, the point has been reached where mill capacity exceeds the amount of timber presently available for cutting on an annual sustained-yield basis. The National Land Reserve occupies an important position in supplying this resource to industry and it will occupy an even more critical position in the near future.

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The Willamette Valley is one of the richest agricultural valleys in the [illegible] the Western United States.

[illegible]

[illegible] within the confines of the [illegible] and [illegible] to the [illegible] which [illegible] from the [illegible]. [illegible] 25 [illegible] plants and [illegible] 19, 20 and [illegible]. In addition there are [illegible] plants within [illegible] the [illegible].

In the past, [illegible] in this [illegible] the [illegible]. As a [illegible], the [illegible] industry and [illegible].

[illegible]

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Range Livestock

The grazing of cattle and sheep on range areas in this unit are very limited and approach marginal economic operations. They are for the most part found on small ranches in the low drainages of the mountainous central area. The livestock owners are primarily involved in other activities, such as logging and the raising of crops, to receive their main source of income.

Recreation

Recreation is the third leading industry in the state and many of the scenic attractions and sports facilities responsible for its high placement are located in the Alsea-Rickreall Master Unit.

The coastal area containing the "21 miracle miles", on Highway 101, representing a scenic rugged coastline, salmon fishing, boating and swimming, typifies the entire Oregon coastal strip. Depoe Bay is one of the most popular seaports in Oregon for chartering boats for salt water salmon fishing.

There is a heavy influx of out-of-state tourists, particularly from California, which avail themselves to the recreational resources of this area. The coastal highway, Route 101, provides a main thoroughfare for traffic bound either for California or Canada. The Willamette river to the east is extremely popular with boating enthusiasts, however, this is normally local use. There are various roads connecting the main highways running north and south which provide the traveler with scenic views of the rugged Coast Range. Oregon has been active in establishing state parks, howe er they are primarily localized to the coastal area.

The central portion of the unit supports a large population of deer, grouse, mountain quail and a limited number of elk, while the agricultural area in the eastern extremity contains pheasants, valley quail and also migratory fowl. Hunting in these areas is usually restricted to resident hunters.

The present demand on recreational facilities is substantial and it is felt that with the anticipated western expansion and higher standard of living that there will be a much greater demand in the near future. The Willamette Valley will provide sites for industrial and residential growth and its proximity to this unit will necessitate accelerated programs in recreational development.

Mining

Past mining in this unit has been negligible and it is expected that the future will show this activity as remaining status quo.

The coastal area has potential for off-shore oil and gas leasing, however exploitation is presently in an embryonic stage.

Transportation Systems

Highways and roads traverse the Alsea-Rickreall Master Unit to the extent that few areas could be considered inaccessible. The main highways 101 and 99W

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run in a north and south direction and are heavily utilized during the summer months by tourist traffic. Logging roads net much of the area and with some exceptions are all open to the public.

The Southern Pacific Railroad and the Oregon Electric Railway trunk lines run north and south through the Willamette Valley and the Southern Pacific Railroad spur lines run into Dawson and from Corvallis through Nashville to Toledo and Siletz. Another line, the Valley and Siletz Railroad, connects with the Southern Pacific at Independence and runs to Valsetz. The Southern Pacific also services the town of Dallas.

The Willamette River is used extensively for log dumping, rafting, towing, storage and reloading. On the coast at Newport, ocean-going ships and barges load and ship wood products and logs.

There are no commercial airline stops in the Unit, however Salem and Eugene, adjacent to it, are serviced by United Air Lines and West Coast Airlines.

The Oregon State Highway Department has been quite active in their road development program in this area. A proposed relocation of State Highway 34, connecting the coast and Willamette Valley is presently being considered and if approved will result in more tourist traffice through this unit.

Energy Systems

The Portland General Electric Company services the majority of the private and commercial consumers of electricity in this unit. Consumers Power and Salem Electric also supply electricity. The Bonneville Power Administration supplies more than 50% of the electrical energy to the private utility companies.

Natural gas is available throughout portions of the area and the Northwest Natural Gas Company is rapidly expanding its distribution facilities to serve new commercial and domestic consumers.

Water

There is no significant water shortage problem in this area since the seasonal average of 40 - 75 inches helps to provide an abundant supply for domestic and commercial purposes.

There is a limited amount of irrigation in the agricultural Willamette Valley.

Public Works Projects

The Bureau of Reclamation is presently involved in two irrigation projects; one a diversion of water in Mill Creek north of Dallas and another of the Willamette River near Buena Vista.

Since the Willamette River is a navigable body of water, the Corps of Engineers has the responsibility of dredging the channel and keeping it free of obstructions for river traffic.

The U. S. Air Force has a SAGE installation on the grounds formerly occupied by Camp Adair, approximately 7 miles north of Corvallis, it is the nerve center of an early warning system for the Pacific Northwest.

The Bonneville Power Administration has approximately 12 major relay stations in this unit and countless smaller stations.

Labor Unions and Farm Co-operatives

The Alsea-Rickreall Master Unit is almost devoid of any major industrial factories; consequently union activity is relatively minor. The unions are concentrated in the logging and lumber industries and to some extent in the shipping industry on the coastal area. The Western Forest Industries Association, made up primarily of the smaller logging operators, is active in promoting legislation and programs in regards to the availability of the timber resources to the logging and lumber enterprises.

Farm Co-operatives represent a large segment of the farmers in the Willamette Valley.

Local Planning and Control Groups

The various counties within this unit have planning commissions and thelarger towns such as Dallas, Corvallis, Newport and Toledo have municipal planning commissions. Lincoln and Benton Counties have been particularly active in recreational development through singular efforts and in co-operation with the State of Oregon and the Federal Government.

Local Public Institutions

The Oregon State University is located in Corvallis and the Oregon College of Education is located in Monmouth.

V. Lands

There are approximately 1,533,072 acres of land in the Alsea-Rickreall Master Unit. Of this total, 1,154,534 acres or 75% are in private ownership, 194,554 acres or 13% in National Forest, 56,861 acres or 4% in County, State and Municipal lands and 127,123 acres or 8% in National Land Reserve.

The Bureau of Land Management administers 102,754 acres of Revested Oregon and California Railroad Grant Lands and 24,369 acres of Public Domain. These lands are primarily located in the central mountainous region with scattered isolated tracts in the coastal area and foothills of the Willamette Valley.

The Siuslaw National Forest located in the western portion of the unit represents the total National Forest acreage.

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The Siletz and Grande Ronde Indian Reservations have been terminated and there are not presently any lands under the administration of the Bureau of Indian Affairs.

There are no National Parks or Fish and Wildlife refuges or hatcheries in the master unit.

The Oregon State Land Board and Oregon State Forestry Department lands total approximately 51,000 acres in this unit. Recently the state has been active in selecting National Land Reserve by applying for the acquisition of 2,874 acres to satisfy outstanding State lieu selection rights. All state lands having potential for timber management are administered by the State Forestry Department.

Municipal and County lands total approximately 5,000 acres.

Private lands are dispersed throughout the unit and range from small holdings to large blocks owned by such corporations as Willamette Valley Lumber Company, Boise-Cascade Lumber Company, Crown-Zellerbach, Georgia-Pacific, Columbia Pulp and Paper. Rex Clemens is the largest individual unincorporated landowner in the unit.

USE AND DEMAND FOR BLM LAND

Agriculture

There is no demand on the National Land Reserve for agricultural use since these lands do not lend themselves to any form of an economical farm operation.

Grazing

The demand on the National Land Reserve for grazing use is minor. There are presently 3 active grazing leases in the unit, however the grazing capacity of these lands are low and consequently the operations are relatively small. Grazing does not conflict with other possible uses of these tracts since they are poor sites with extremely shallow soils, thus precluding any reforestation measures necessary to convert them to timber production.

Forestry

The Bureau of Land Management plays a vital role in providing the timber resource on a sustained yield basis since they administer 127,123 acres, or 8.3% of the total acreage in this unit. Of this total, 120,480 acres, or 94.7%, are in commercial coniferous forest land. There are 30,349 acres of mature timber stands supporting a total of approximately 2 billion board feet of which approximately 80 million board feet are offered for sale each fiscal year.

Although the acreage administered by the Bureau comprises only 8% of the total it represents, in terms of timber volume, a much greater share, since the rate of depletion on these lands has been far less than that in private ownership. Approximately 24% of the National Land Reserve consists of mature timber stands.

The Siletz and Grand Ronde Indian Reservations have been terminated and there are not presently any lands under the administration of the Bureau of Indian Affairs.

There are no additional lands of Fish and Wildlife refuges or hatcheries in the subject unit.

The Oregon State Land Board and Oregon State Forestry Department lands total approximately 24,000 acres in this unit. Recently the State has been active in selecting National Land Reserve by applying for the acquisition of 2,614 acres to satisfy outstanding state land selection rights. All these lands having potential for timber management are administered by the State Forestry Department.

Municipal and County Lands total approximately 2,060 acres.

Private landowners are scattered throughout the unit and range from small holdings to large blocks owned by such corporations as Willamette Valley Lumber Company, Boise Cascade Lumber Company, Crown Zellerbach, Georgia Pacific, Columbia Plywood Corp. is the largest individual noncorporate landowner in the unit.

USE AND DEMAND FOR THE LAND

Agriculture

There is no demand on the National Land Reserve for agricultural use. These lands do not lend themselves to any form of an economical farm operation.

Grazing

The demand on the National Land Reserve for grazing use is minimal. There are a few leased areas in the unit; however, the grazing capacity of these lands are low and consequently the operations are relatively small. Grazing does not conflict with other beneficial uses of these lands since they are perimeter with extremely small [illegible] and [illegible] necessary to support them to higher production.

Forestry

The Bureau of Land Management plays a vital role in providing the timber resource on a sustained yield basis since they administer 137,123 acres, or 8.7% of the total acreage in this unit. Of this total, 120,480 acres, or 87.9%, are in commercial coniferous forest land. There are 39,400 acres of mature timber stands supporting a total of approximately 4 billion board feet of which approximately 80 million board feet are offered for sale each fiscal year.

Although the acreage administered by the Bureau comprises only 8% of the total in acreage, in terms of timber volume, a much greater share, since the rate of depletion on these lands has been far less than that in private ownership. Approximately 25% of the National Land Reserve consists of mature timber stands.

Generally, the timber sold by the Bureau is on an oral bid basis and the volume on the tracts offered ranges from 500 thousand board feet to 10 million board feet. As a result, the many small operators, characteristic of this area, are able to avail themselves of the timber as well as the large individual operators and corporations. The many small communities, containing a relatively high percentage of its inhabitants engaged in the logging industry, benefit economically as well as the larger towns where the logs are generally milled. This resource contributes to the economy of the adjacent as well as the local populace and communities and just as important, has a stabilizing affect on that economy by being made available for harvest on a sustained-yield management basis.

The majority of the National Land Reserve is located in the central mountainous area in this unit. There are small scattered tracts along the coastal area which are generally adjacent to or intermingle with National Forest Lands. Except for a few minute sized tracts, there is no National Land Reserve in the Willamette Valley.

The major commercial coniferous species is Douglas-fir, with Western Hemlock and Western Red Cedar as common stand components and to a limited extent, Grand Fir. Concentrations of Pacific Silver Fir, Noble Fir and Western White Pine are found only in limited areas at the higher elevation levels. Red Alder and Big Leaf Maple are the most important commercial hardwood species.

The Rickreall Forest Management Area inventory was completed in 1959 and the re-inventory of the Alsea Forest Management Area was completed in 1961. The present declared allowable cut for this unit is 72 million board feet. In addition to this volume, approximately 7 million board feet in the form of salvage, thinning and re-log timber is offered for sale each fiscal year and is not chargeable to the allowable cut.

The Bureau's program incorporating the concepts of sustained-yield forest management continues to harvest the timber under the staggered-setting system of cutting. A concerted effort has been made to harvest those residual stands of timber where the understory of reproduction has been sufficient to classify the area as being adequately stocked. Through these efforts the number of relog or residual areas presently in this unit are negligible. The tremendous windthrow problem incurred by the Bureau in 1952 has been alleviated by the salvage operations conducted in the subsequent years in order to harvest the volume which otherwise would have been lost through decay and serve as a breeding are for destructive insects. The normal damage to the timber through winter winds continues to have priority for inclusion in the annual timber sale plan, however, the backlog has been materially reduced so that the salvage operations are nearly on a current basis.

An insect infestation problem became pressing in 1956 with the discovery of a Balsam Wooly Aphid infestation of the Pacific Silver Fir and Noble Fir in a localized area in the unit. Salvage operations began immediately and to date the greatest concentration of the infested timber has been logged. The development of virgin drainages receives special emphasis so that the over-all forest development in the unit is uniform

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in accordance with the principles of sound forest management.

The silvicultural practice of thinning immature stands of timber has been recently implemented into the Bureau's program and there now exists 5 active commercial thinning operations in the unit. Thinnings will continue to receive special emphasis in the future and it is anticipated that other stand improvement measures such as pruning and early thinnings will become operational.

The demand for hardwood species continues to fluctuate with market conditions, however the trend indicates that the demand will become greater each year. To date the unit has made 2 hardwood sales and consideration is being given to the future inclusion of hardwood sales in the annual timber sale plan.

The rehabilitation of non-stocked lands caused by cutting and other forms of denudation has and continues to occupy an important position in the Bureau's program. In many instances snag falling, scarification and brush eradication, through chemical spraying, comprise the site preparation measures necessary prior to the seeding or planting operations. In the fiscal years 1958 through 1961 approximately 3,887 acres have been planted and 4,786 acres seeded under the terms of timber sale contracts or procurement contracts. These artificial reforestation measures are supplemented to some extent by natural reforestation.

The unique checkerboard pattern of the National Land Reserve results in the necessity of granting and receiving road rights-of-way from the adjacent private owners. General agreements with the U. S. Forest Service and the State of Oregon guarantees the United States access across the lands administered by these agencies. Since the development of any area is dependent upon its accessibility, the procurement of rights-of-way enjoys an extremely high priority in the Bureau's total program. Because of the necessity to negotiate with certain parties in the securing of these rights it is often the weakest and most time consuming link in the forest development chain.

Under the principles of a balanced use program, recognition is made of the various and best uses of the land under the Bureau's administration. In most instances these uses are compatible, however when a conflict does exist, a determination is made based on the best and highest interest to the United States and its public.

The protection of the lands under the Bureau's jurisdiction is on a contractual basis with the Oregon State Board of Forestry.

Perhaps the greatest problem facing the Bureau at the present time is the tenure of the Public Domain lands. Within the past year scrip applications have been filed for 600 acres and the state of Oregon, under the State Lieu Selection Law, has applied for 2,874 acres of Public Domain in the Alsea-Rickreall Master Unit. These tracts are high value timber-producing lands and their disposal would have a measurable impact on the Bureau's Forest Management program.

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A request for the classification of these lands under Section 7 of the Taylor Grazing Act was recently made as an initial step in securing the tenure of these lands. It is necessary that they undergo the same intensity of management as the O&C lands in order that maximum sound use be made of their inherent natural resources in accordance with the vital role of the National Land Reserve to the economy of this area as well as the nation.

As mentioned previously the securement of access to the National Land Reserve tends to be a stumbling block to the forest development program. This factor is compounded by the ownership pattern in the unit. Present right-of-way regulations appear to antagonize certain individuals, however, and it is felt that this is not the main problem. To a certain extent the determination of equitable values presents difficulties, however the problem could more readily be attributed to the philosophy of the private land owner. A sense of surrender to the General Government through the forced selling, in a sense, of rights or private property, on the terms of that agency, may be the crux of the situation.

In order to resolve the problems incurred by the checkerboard land pattern and to facilitate sound optimum forest management practices, an active and workable land exchange program should be initiated. Scattered isolated tracts could be disposed of and lands of equal value obtained within the major block-up areas of the National Land Reserve.

There are other problems such as an effective means of controlling and eradicating undesirable species in lands presently classified as non-stocked, however in comparison to those stated above, they may be considered minor.

Minerals

Mineral activity in the past and present is extremely limited. There are 12 pending and active oil and gas leases in the unit, however they are primarily speculative in nature.

Water

The National Land Reserve is located, in part, in the area tributary to the City of Dallas watershed. O&C lands administered by the U. S. Forest Service form a vital part of the City of Corvallis watershed. The Bureau through its silvicultural practices and control of logging operations protects stream flow and minimizes surface erosion.

Recreation and Wildlife

The Bureau of Land Management has just recently launched itself into the sea of recreation. The National Land Reserve in this unit is not primarily located in those areas which presently undergo heavy recreational use. Local people and tourists tend to flock either to the coastal area or the Cascade Mountains for their particular recreational activities. The Willamette River does have some attraction for boating enthusiasts, however

The above areas are where week-end and week-long vacations tend to be spent. The National Land Reserve has definite potential however, for recreational development for wayside park areas and for those uses which would be utilized on a daily basis. The rugged and scenic nature of the Coastal Range is a strong attraction for the tourist but primarily only as a view through a car window. Lakes or snow-capped mountains, a magnet for vacationers, are entirely absent from the National Land Reserve. Few tracts adjoin the more traveled routes so that recreational development will generally be geared to the local populace. It is anticipated that the projected population growth of the Willamette Valley will result in an increased demand for local recreational areas. Many of these areas will be utilized by fishermen and hunters as the private lands become more and more closed to public hunting and fishing. They provide food and habitation to big game animals such as deer, bear and elk and upland game such as mountain quail, band tail pigeons, blue and ruffed grouse. Some of the better fishing streams in Western Oregon flow through the National Land Reserve and provide catches of salmon, steelhead and trout. The present demand on the National Land Reserve, except possibly for hunting and fishing, is not great however by providing recreational facilities at this time the Bureau will be in the position to meet the projected recreational needs of the future.

A recreational area is planned for development in fiscal year 1962 on the Alsea Highway immediately off State Highway 34. It is one of the few areas in this unit adjacent to a major arterial route and its design is geared to tourists as a wayside rest area and eventually overnight camping area as well as to fishermen. A second recreational area is planned in the near future adjacent to a scenic water falls accessible by a newly constructed road built under the Bureau's access road program. There are approximately 14 areas in the Alsea-Rickreall Master Unit which have some recreational potential. Some of these will be developed in the near future, others will be held in reserve until the need arises for their development.

Under the existing right-of-way regulations the public is guaranteed access to the National Land Reserve in those cases where the Bureau has obtained rights across the private land owner's property. In many instances however, locked gates and private property signs greet the motorist as he attempts to reach the public lands. Fortunately most private land owners are extremely co-operative in allowing the public to make use of the roads on their property.

Normal timber cutting practices and recreation are not too compatible uses. The designation of an area as having recreational potential necessitates a buffer zone to be determined so that the aesthetic value of the park or campsite will not be damaged by logging operations conducted adjacent to it. This does not mean that the area would be removed from timber production and volume subsequently lost. Individual trees would be selectively marked and cut in such a manner as to keep the recreational value intact and their use unhampered. These areas would not, however, be clear-cut as is the normal practice in the Douglas-fir timber types.

A problem which is not too serious at this time but will perhaps be in the near future is the identification or posting of the National Land Reserve.

This will particularly apply to hunters and fishermen who seek their quarry on the public lands. Except for occasional line crossing tags, it would be impossible for the general public to ascertain where these lands are located on the ground. There will be little trouble in those areas where the adjacent private owner allows public entry, however it will be acute in those areas where no trespassing is permitted.

The location of the National Land Reserve precludes its use for commercial, industrial or urban development at the present time. It is not out of reason however, that the projected growth of the Pacific Northwest may result in certain tracts being within the perimeter of future commercial or residential development areas.

VI. Conclusions

1. The National Land Reserve plays an active and vital role in contributing to and stabilizing the economy of the area within the boundaries of the Alsea-Rickreall Master Unit. It also influences, to varying degrees, the economy of areas contiguous to the unit as well as occupying an important position in the overall development and economic growth of the State of Oregon.

2. The National Land Reserve provides on an annual basis, approximately 80 million board feet of timber to the wood products industry; the leading industry in this area and state. Its function in supplying this resource will become increasingly important due to the rapid depletion of timber on private lands conducted, in many instances, without forethought to the regeneration of desirable commercial species. Greater utilization and progress in forest management technology, resulting in increased yield, will place the National Land Reserve in an even more critical position in the future than it occupies today.

3. The policies and practices of the Bureau of Land Management, in its administration of these lands, lends itself ideally to those economic factors which are characteristic of the Alsea-Rickreall Master Unit geographical area. By placing timber on sale in quantities ranging from small to large, the small operator, so prevalent in this area, is able to avail himself to this resource as readily as the larger companies and corporations. Without sacrifice of sound forest management principles, the National Land Reserve thus services the cross section of the industry, small and large enterprises alike.

4. The harvest of timber is not the sole, though most important, facet of the role of the National Land Reserve in forest development. Related activities such as reforestation and site preparation measures necessitate utilization of the populace and in turn contributes to the economy of the local and adjacent areas. Minor products such as fern, maple burls, rock, cascara bark and others comprise a minor but integral part of the total affect of the forest products industry on the populace, communities and state.

5. The National Land Reserve provides food and habitation to big and small game as well as to game fish. The rugged nature of these lands have

a limiting affect on their optimum use by hunters and fishermen and consequently generally support high populations of fish and game. With the anticipated increased closure of private lands to free hunting and fishing, at least, more and more pressure will be brought to bear on their use by sportsmen.

6. The demand for recreational facilities in this area are becoming increasingly greater as is true of the state and the nation. The construction of a way-side park area is scheduled for construction this fiscal year and intensive inventories have pin-pointed those areas which have recreational potential for future development. The initial developments will be geared to the use of the sites on a one day visit basis, however as the deman indicates facilities will be provided for week-end or week-long camping. The local populations will primarily avail themselves of and benefit from these areas and since the sites are for the most part removed from the more heavily traveled tourist routes.

7. The National Land Reserve is located generally on the headwaters of the many streams and rivers that traverse the master unit. Their importance in providing water for irrigation, public consumption and habitat for game fish is of vital concern, to the welfare of the area.

8. Grazing on the National Land Reserve is extremely limited and existing leases represent small operations which serve only to supplement the lesee's main source of income.

9. The potential of the Public Domain lands has not been fully ascertained due to the low priority affixed to the surveying and field examination of many of the tracts. The unstable status of these lands has precluded any substantial investment or development by the Bureau. A recent request for their classification under Section 7 of the Taylor Grazing Act is an initial step in securing their tenure and subjecting the Public Domain Lands to the same intensity of management as characterize the O&C lands.

10. Modified exchange procedures are necessary in order to facilitate the exchange of lands outside the major block-up areas of the National Land Reserve for those lands within its perimeter. An active exchange program would alleviate many of the problems stated in this report, such as access and the posting of the public lands, resulting in the improved management of these lands.

Summary

Timber production is the most singularly important function of the National Land Reserve and it is also the activity having the greatest affect on the economy of the area. The need for recreational facilities and the protection of areas having high aesthetic values is gaining recognition.

Other functions of the National Land Reserve include the sale of minor products, habitation for wildlife, grazing and the protection of watersheds and stream flow. All of these uses are compatible and inter-related and form an integral part of the total balanced use program of the Bureau of Land Management. Each individually, but more important, collectively, contributes measurably to the welfare and economy of the populace of the Alsea-Rickreall Master Unit as well as the state.

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CLACKAMAS-MOLALLA

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MASTER UNIT CLASSIFICATION STUDY
Molalla Forest Management Area
Clackamas - Molalla Master Unit

Initial Analysis

I. Location

The Clackamas-Molalla Master Unit is located in western Oregon, south and east of Portland, the principal city of the state. It is bounded on the North by the Columbia River, on the East by the summit of the Cascade Mountains, and on the West by the Willamette River.

The south boundary is common to the north boundary of the Santiam River Master Unit and in the hills generally follows the division in the drainage of the Clackamas and Molalla Rivers and the Little N. Fork Santiam River and Butte Creek. In the valley it follows the township line between Townships 5 and 6 South, running west to the Willamette River. This generally encompasses the Clackamas and Molalla River drainages. The master unit includes all of Multnomah and Clackamas Counties and small portions of Marion County.

II. Internal Physiographic Features

Included in the master unit is the fertile valleys of the Willamette and Columbia Rivers as well as the foot-hills and peaks of the Cascade Mountains. The two rivers and Mt. Hood, elevation 11,245 feet are the dominent land marks in the unit.

The floor of the valley is about 150 feet in elevation. The average for the unit is about 2500 feet.

As a result of this wide range in elevation over the unit, climate also varies accordingly. In the valley the climate is mild and a large variety of fruits, vegetables, and animals are raised. Beginning at 2000 feet almost no farming is done except for a small amount of grazing. The hills are mostly timbered (or cut over) except for the rocky high ridges and the higher elevations are covered with snow most of the year.

Rainfall varies from 40" in the valley to 100" per year in the mountains.

III. Social Factors

The 1960 census population of Clackamas County was 113,000 and of Multnomah County 522,300. In the latter county almost the entire population is in the Portland metropolitan area. There is only one other town of size, Gresham which has about 4,000 population.

Clackamas County has 11 towns ranging from about 1,000 to 9,000 population in the county seat, Oregon City. A little less than a third of the people reside in these towns. In both counties practically the whole population is in the west portion.

Outside of a general population increase in the state and the general trend to urban life, there has been no change in the population in the last 10 years.

Thomas H. Makey
July 5, 1961

[illegible]

[illegible]

[illegible] Master Unit

[illegible]

Location

[illegible] located in western Oregon, north and [illegible]

[illegible]

II. Internal Physiographic Features

[illegible]

The floor of the valley is about [illegible] feet in elevation. [illegible]

[illegible]

[illegible]

III. Social Factors

[illegible]

[illegible]

[illegible]

[illegible]

There is no radically ethnic or social groups of significant importance in the area unless the growing summer home site population in the Mt. Hood area should be considered as such.

There has been no apparent shortage of labor in the past few years except locally during fruit harvests. This is generally alleviated by migrant workers from California and Mexico. Children of school age are also a large supply of seasonal labor.

Unemployment of local workers increases during the winter when logging slacks off. However, many of these are small farmers who can make use of some of this time.

It can be said that this master unit is a fairly prosperous area with a small percentage of people on general unemployment compensation.

IV. General Economic Factors

The basic income producing occupations are farming and dairying, forest products, and recreation. Recreation is rapidly increasing from a poor third to compete with the other two for the major industry.

AGRICULTURE

Farming in the Clackamas-Molalla Master Unit is almost wholly in the river valleys. This comprises roughly 1/3 of the total area. Crops vary from hay and grain to truck and includes both berry and tree fruits. Dairying and other livestock are also integrated in many farm units. Most farms are under 160 acres and it is not uncommon for the smaller farmers to have either steady or seasonal jobs elsewhere.

The climate is mild in the farm areas. The valley is generally frost free for 6 months (May through October) and the temperatures rarely go over 98° F. in the summer or under 25° F. in the winter. Precipitation is mostly during October to June with the summers quite droughty. Overhead irrigation is used for most crops.

The soils vary from the rich sandy loams in the flood plains to heavy clays that are frequently rocky in the foot hills. Although most farms are contour cultivated there is apparently little erosion of consequence except on the marginal farms higher in the hills.

FOREST PRODUCTS

Industry in the Clackamas-Molalla Master Unit consists primarily of sawmills and other wood conversion plants. The timber to supply these mills comes from the area not used in agriculture, or about 2/3 of the entire land area. An unknown portion of this so called timber land is too rocky or too high to either produce presently merchantable timber or have any timber at all.

The number of mills in the area, as elsewhere, is in a constant state of change. Many small mills operate only under good market conditions. Changes

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in consumer demand for products and new technology has caused sawmills to close and plywood mills to be built.

At this time in the master unit there are approximately -

92	sawmills
14	plywood and veneer plants
2	pip and paper plants
102	woodworking and remanufacturing plants
210	TOTAL

This can give a distorted picture of the utilization of wood grown within the master unit. About half the mills are located in Portland which receives logs from all over the state and probably Washington. Logs are rafted from eastern Oregon down the Columbia River from the whole Willamette Valley and from the coastal areas. On the other side mills in Salem and elsewhere get some raw material from the master unit.

The full annual capacity of the mills is seldom reached. The consumer market, except during the post-war years, rarely encourages full production. This annual capacity could reach over 1 billion feet of timber. It is possible to determine the full timber growing capacity in the Clackamas-Molalla Master Unit, but at least by continuing the supplement from outside the unit the full present mill capacity could be supplied. More intensive forest practices such as thinning and putting all potential forest lands into full production would greatly increase the growing capacity.

Generally speaking, the lands in the lower elevations are privately owned while the higher lands are federally or state owned. As a result, being closer to the market, better timber and cheaper logging, these private lands were the first to be logged of the old growth timber. A large portion of these lands adequately restocked themselves naturally. Much of it, however, is sparsely stocked with commercial species or is covered with brush. Only the large land owners have made significant efforts to bring all of their lands into full production. The large companies are gradually purchasing land from the owners of small tracts.

Since the private timber was first to be logged, only a minor portion of the presently available merchantable stumpage is on these lands. However, in about 30-50 years when the first cut-over lands have their second crop produced, the availability will tend to balance out between private and Government stumpage. Of the three major companies, Crown Zellerbach Corp., Weyerhaeuser Timber Co. and Publishers' Paper Co., Crown and Publishers' are now thinning and harvesting on private land in young stands of 60 years and older.

RANGE LIVESTOCK

Because of the high rainfall in western Oregon, most land is more productive for other agricultural uses than for grazing. The Clackamas-Molalla Master Unit is typical of this. Many crop farmers have small herds of cattle and sheep, pigs, and some goats. There is also considerable dairying. The

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heavy stands of Douglas-fir - hemlock timber have very little forage underneath so true stock grazing is almost nil.

RECREATION

The proximity of Portland and Salem and Eugene to the Mt. Hood area puts at least two-thirds of the state population of 1,768,000 within a 100 mile radius. With the population in Washington within this radius, a total of about 700,000 people live within 100 miles of Mt. Hood. The recreational activities in the Mt. Hood area are also of national interest and attract visitors from all parts of the country especially California.

This area has opportunities for almost any type of recreation. Included are:

Scenery
Hunting
Fishing
Skiing
Camping
Boating
Historical site
Large dams
Swimming

The Columbia, Willamette, Molalla, and Clackamas Rivers all extend most of this recreation to cover almost all the unit. The various activities make it a year round recreational area.

As would be expected, under these conditions, the demand for recreational use today is greater than has been provided for. The demand in the future will probably exceed the potential in the unit.

MINING

Mining activity in the past and present has been of insignificant consequence. There is even less activity now than in the past. There is no forseeable significant mining activity in the future.

INDUSTRY OTHER THAN THOSE ABOVE

Portland has, besides the usual assortment of local industries of large cities, considerable shipping. It is one of the major ports on the west coast and is located on fresh water. It is also the western terminal of the Southern Pacific and Northern Pacific, Union Pacific, and Great Northern Railroads. It also has an International Airport.

In other towns, as well as Portland, there are many canneries. Outside of wood processing plants, however, this area is not considered to be industrializ

TRANSPORTATION SYSTEMS

As stated above, the master unit corners at the railroad, air line, and shipping center of Portland. The rivers are used extensively for rafting and storing logs. In addition, Highway U.S. 99 E follows the Willamette River and is the major north-south road in western Oregon. Highway U.S. 30 and 26 form the Mt. Hood Loop and are major roads to the east from Portland.

All three counties have extensive county road systems throughout the populated agricultural areas. The privately owned forest areas, since they have been mostly cut-over, have fair roads, privately owned, adequate for harvesting their timber.

Roads are being built on the state and federally owned lands as fast as timber sales and appropriated money will permit. An inestimable number of miles have already been completed.

ENERGY SYSTEMS

Both Portland General Electric Corp. and Bonneville Power adequately serve the present need for electric power in the master unit. The Portland Gas Co. is rapidly expanding its supply of gas to the area.

The Bonneville dam inthe Columbia River and the series of P.G.E. dams in the Clackamas are the main sources of electric power. The gas is mostly piped in over the new line from Canada.

WATER

Water is a major factor in the economy of the unit. It is used profusely for power, irrigation, transportation, and industry as well as domestic uses.

The 100 inches of precipitation, mostly in the Cascades, tends to flood the streams from January to June. The 40 inches in the valley, mostly during the winter, is much more than is used during that time. The critical period is during the drought months of July to October. Many dams and reservoirs help to alleviate the scarcity during the summer months.

Ground water is not critical except for farming. Overhead irrigation is used by most farmers to counteract this scarcity.

As previously indicated, the main rivers are used for navigation and log transportation all year round. Considerable electric power is obtained from the several dams already constructed. The reservoirs receive high recreational use. More dams will be needed in the future to keep up with the demand for water control and use.

The City of Portland Watershed, including the Bull Run Reservoir, the Oregon City Watershed, and the Corbett Watershed are within the master unit.

PUBLIC WORKS

There are no public works projects in construction state at this time.

Labor unions have a normal influence in the Portland and Salem areas. The smaller towns and rural areas are not greatly influenced by them. Farm co-operatives are common, however their large influence of the past is gradually dwindling with the ranks of the farmers.

Multnomah County has an influential Planning Commission incorporated with the

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Portland Commission. Clackamas and Marion Counties both have active planning commissions. All three have been in effect for several years.

FEDERAL AND STATE ASSISTANCE GROUPS

Agricultural and Home Extension agencies are active in this unit as they are all over the NW part of the state. Federal unemployment and county welfare agencies take reasonable care of the needy. They are essential by agencies such as the Veterans' Hospital in Portland. The federal aids such as farm supports, Land Bank, Soil Conservation Service and Small Business Administration are used to a moderate degree in the area.

PUBLIC INSTITUTIONS

Portland State College and the University of Oregon Medical School are located in Portland. Some of the state offices are also located in Portland, as well as many U.S. offices including Bonneville Power Administration, Bureau of Land Management, U. S. Forest Service, and U.S. Fish and Wildlife Service. The U. S. Air Force has a fighter base at the International Airport.

In addition, the State of Oregon offices are in Salem, the state capitol which is located just outside the master unit.

The Clackamas-Molalla Master Unit is separated from the State of Washington by the Columbia River. This is especially significant in that Crown-Zellerbach has one of the countries largest pulp and paper mills at Camas, which is on the Columbia River opposite the master unit. This mill gets much of its raw material rafter in the river from the unit. The Weyerhaeuser and Longview Fibre Co. mills at Longview, Washington about 55 miles downstream from Portland gets many of its logs by rafting from the unit.

V. The Lands

Typical of Oregon, the major portion of forest lands are in federal ownership.

The Bureau of Land Management administers 51,200 acres of Reinvested Oregon and California Railroad Grant lands and 12,824 acres of Public Domain in the unit. The U. S. Forest Service administers approximately 700,000 acres of National Forest and approximately 7,000 acres of O&C lands in the Mt. Hood National Forest.

Considerable federal lands are withdrawn along the rivers for power sites and recreation.

Considerable acreage is owned by the state. The state lands are administered by the Oregon State Board of Forestry and State Land Board. Portland and Oregon City exert considerable influence on the administration of federal and state lands within their watersheds. The counties have some lands and administer a few parks located on BLM lands.

Most of the farm land is in small ownership of 160 acres and less. Many small tracts of forest land (usually cut over and often covered only with brush) are privately owned. The three major private landowners, Crown-

Portland Commission. Clackamas and [illegible] Counties both have active planning commissions. All these have been in effect for several years.

[illegible] AND [illegible]

Representatives of the Extension Service are located in this unit or they are all over the [illegible] of the state. [illegible] welfare [illegible] considerable [illegible] of the county. [illegible] such as the Veterans' Council in Portland [illegible] for some programs. [illegible] Family counseling are [illegible] in the area.

[illegible] INSTITUTIONS

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V. The Land

Typical of [illegible] the major portion of forest lands are in [illegible]

The Bureau of Land Management administers [illegible] acres of [illegible] Oregon and California [illegible] Grant lands and 16,728 acres of [illegible] in [illegible]. The U. S. Forest Service administers approximately [illegible] acres of national forest and approximately 1,000 acres of [illegible] lands in [illegible] unit.

Considerable federal lands are withdrawn along the rivers for power sites and reclamation.

Considerable acreage is owned by the state. The state lands are administered by the Oregon State Board of Forestry and State Land Board. [illegible] the Oregon City [illegible] influence on the administration of federal and state lands within the [illegible]. The counties have some lands and administer a few parks located on BLM lands.

Most of the private land is in small holdings of 160 acres and less. Very small tracts of forest land [illegible] are often covered only with [illegible] hardwoods, brush [illegible]

Zellerbach, Weyerhaeuser and Publishers' Paper Co. are still purchasing land as the opportunity arises. Other large timber companies such as Longview Fibre have small ownerships within the unit.

National land reserve administered by the BLM consists of Public Domain and Revested Oregon and California Railroad Grant lands and its land pattern is generally checkerboarded as is typical of O&C lands. The lands vary in location from unsurveyed islands in the rivers, scattered small tracts among the higher farm lands, full sections in checkerboard pattern in the foot hills of the Cascades, to blocked up lands of 300 ft. resulting from the 1956 BLM-Forest Service exchange. There are small areas in which alternate sections are P.D. and O&C also forming solid blocks of ownership.

None of the remaining National Land Reserve can now be classified for agricultural use. Even those lands in the general farm area are too steep, too rocky or the soil too poor for anything but sub-marginal farm land. Its highest use is for the growth of timber with its incidental values of watershed and recreation as well as raw material for the wood using mill.

These lands are almostwholly stocked with Douglas-fir, Hemlock, and Noble fir in various age classes from newly seeded or planted to 300 year old growth timber.

There is an infinite variety of uses for the National Land Reserve demanded by the public as individuals, groups or organizations and public agencies. These vary from free use for firewood, cascara bark and fern fronds to homesteading and huge set asides for nature lovers. Many of these demands are incompatible with the national and local public interest for which the Bureau is required by law to administer the lands and are therefore rejected. Other demands are compatible with the public interest and must be taken care of.

AGRICULTURE

Occasional applications for homesteads, public sale and lease for agricultural use are still made for tracts within the National Land Reserve. Although in the past many of these applications were approved in the Clackamas-Molalla Master Unit, all recent ones have been rejected because the lands did not qualify.

There is one lease for agricultural use in the unit.

GRAZING

Since passage of the closed range in Clackamas Co. about 2 years ago, grazing has become insignificant on BLM lands. Grazing trespasses occur on recent cut-over lands where there are weeds and grass, but on lands stocked with trees the forage is inadequate to support grazing.

FORESTRY

Since good forest management is basic to wood supply, watershed protection, and to recreation, the BLM program is of great importance to the general

economy and well being of the people in the unit as well as the surrounding area.

The major portion of the National Land Reserve is in the Cascade Range in elevations of 1000 feet to 3000 ft. The timber types consist of Douglas-fir, Douglas-fir - Hemlock, and Noble fir - Douglas-fir with small areas of Red Alder.

The 64,024 acres in the reserve consists of the following:

19,600	acres rotation age and up
37,489	acres second growth
1,328	non-stocked
3,729	hardwoods
1,878	non-forest
64,024	TOTAL

The annual allowable cut for sustained yield under present management conditions is 34.4 million board feet or about 3.4% of the capacity of mills in the unit.

At this time the BLM is selling the allowable cut each year. The non-stocked areas are seeded or planted to maintain the productivity. Watersheds and potential recreation areas are given special attention. The lands are under intensive fire protection and are being managed in the public interests with balanced usage to utilize the resources of the area to satisfy all legitimate requirements for the available resources.

Access into all the ownership is being obtained as rapidly as time and funds and the cooperation of surrounding land owners permit. The pattern of ownership, being intermingled with private holdings, makes this an important but difficult and time consuming job.

The biggest problem with the possible exception of access is making pre-harvest timber cuts to increase the volume of timber that can be grown per year per acre. Thinnings for this purpose have been made at a small scale on some flat areas but no efforts have been made by the bureau on the steep slopes where most of the thinnable timber is located.

Reproducing non-stocked areas is another big problem. Although reforestation program for this has been going on for 4 years, the progress has been dissapointing due largely to animal damage to the seedlings.

MINERALS

There is very little mineral activity in the Clackamas-Molalla Unit and no significant amount of minerals has ever been found. There is only one active mineral lease (for a soft coal-like product sold for fertilizer). There would be very little problem with mines if they were all filed with the U.S. Land Office.

WATER

All actions on the National Land Reserve are managed to get maximum protection for all water resources. Water for about 10,000 people is taken from the Oregon City and Corbett Watersheds on BLM lands. Good forest management on all the lands is a factor in producing and maintaining the quality of stream flow.

RECREATION AND WILDLIFE

Being in the vicinity of large populations and a particularly popular recreational area, the lands in the reserve contribute appreciably to the total recreational potential. At this time there is a state operated wayside rest area, a portion of Clackamas' Co. Eagle Fern Park, one Special Land Use Permit for a recreational home site, one Special Use Permit for a privately operated park, two small tract leases for recreational use, one county operated campground being developed, and one 40 acre tract of P.D. subdivided into 35 lots and being sold for recreational home sites. In addition, the lands are used by the public for hunting and fishing. Tracts along the Columbia Gorge have been set aside for recreational use.

With the demand for outdoor recreation facilities ever increasing more recreational area, facilities, and improvements will be needed. Probably every potential recreational area will be in demand within the next 10 to 20 years. Two projects in the area are currently proposed for development by FY '63. A recent inventory of recreation potential shows about 20 acres that could readily be developed in the next 10 years.

Generally visits to any area on the National Reserve Lands are on a one day basis. Some overnite campgrounds can be developed.

There is no particularly unique wildlife species in the area. Hunting is confined to deer and upland game birds. There is open seasons on salmon, steelhead and trout in the streams.

The land ownership pattern makes access for recreational use, a problem as well as for logging.

COMMERCIAL, INDUSTRIAL, OR URBAN DEVELOPMENT

It is unlikely that any but occasional small tracts will be needed for commercial, industrial or urban development in the foreseeable future.

VI. Conclusions

The National Land Reserve, administered by the BLM, consists of approximately 6.5% of the total forest acreage in the Clackamas-Molalla Master Unit. However, because its lands are mostly well stocked and are highly productive a much greater percentage of the total timber volume annually removed from the unit is harvested from the BLM lands. This volume, based on sustained yield, therefore, contributes very significantly to the economy of the unit. In addition, 75% of the annual O&C receipt of about $1,000,000 and

5% of the annual P.D. receipts of about $25,000 is given to the counties according to statute.

At the same time this land reserve is contributing at least its proportionate share to the income derived through the recreational use of the unit. Several tracts are located in the foot hills with river frontage. This makes them especially attractive to boaters, fishermen and other water recreationists. The contribution of these lands to city, county, and state park areas is considerable. Hunters, of course, have free use of the federal lands, whereas they are usually restricted from private holdings.

Management of the timber to protect the two watersheds as well as all the water resources materially benefits the communities.

The present large population of the master unit as well as the many tourists put a high demand on uses of all the present resources. The expected increase of population in the near future necessitates intensive planning and development at this time.

TIMBER

It is difficult to determine what portion of the raw wood material harvested in the Clackamas-Molalla Master Unit is utilized locally and how much is transported out of the area for manufacture. Similarly it is undetermined as to how much is shipped into the unit. The keen competition at oral auction for the sales from the National Land Reserve is enough to indicate that timber is not overly plentiful to-day, and there is every reason to believe that the demand will increase in the future. THe BLM is rapidly intensifying its forestry program of rehabilitation and silviculture and partial cutting prior to the final harvest in an attempt to keep up with the demand by making every acre as productive as possible. It is necessary for all forest land owners to do this if the demands for raw wood material is to be met in the future.

WATER

This intensive management is entirely compatible with watershed protection. Control of the logging practices on the watershed areas protects the soil from excessive erosion. Sound forest management on all the National Land Reserve gives maximum protection for all water irrigation resources and helps maintain the streams with a maximum flow for irrigation in ideal conditions for fishing and recreation. The demand for water in the future will probably always be greater than the supply.

RECREATION

The fast increasing demand for outdoor recreation is not always compatible with other land uses. It often requires areas to be set aside for this

special use only. However the BLM is making every effort to make as much of the land reserve and its resources available to the public for recreational uses as can be done without restricting its timber and water supply significantly. It is making recreational land available to cities, counties, and the state and it is developing recreational areas under its own administration. Thus it makes a considerable contribution to the recreational facilities in the unit which in turn aids the welfare and economy.

Thus, through its timber, water, and recreational resources on the National Land Reserve in the Clackamas-Molalla Master Unit, the Bureau of Land Management is helping to stabilize the economy and improve the welfare of almost 1/3 of the population of the State of Oregon.

To continue and improve this vital program the land tenure must be stabilized in federal ownership to insure sustained yield management of the timber and balanced usage of all the lands. The pressures for set asides of land for specific purposes must be firmly opposed.

Land exchanges must be initiated by the Bureau to block up its lands to better enable it to intensively manage them.

Larger appropriations and more trained man power will be needed as the intensity of management increases to keep apace with the constant greater demands for the resources.

The Bureau of Land Management has demonstrated in the past its ability to manage the National Land Reserve in a manner which insures this balanced usage. With its progressive attitude and with adequate funds it will continue to make these lands carry at least their share of support to the welfare and economy of the Clackamas-Molalla Master Unit, the surrounding area, and the recreational visitors from other parts of the country.

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1961	Handbook & Directory of the Forest Industries	Miller-Freeman Publications
1941	Climate and Man Yearbook of Dept. of Agriculture	U.S. Government Print Office
1960	Population, 1960	Dept. of Commerce

SANTIAM RIVER

MASTER UNIT CLASSIFICATION STUDY
Salem Management Area
Santiam River Master Unit

Initial Analysis

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I. Location

The approximate center of the Santiam River Master Unit is located 60 miles south of Portland, Oregon. It is bounded on the West by the Willamette River, on the North by the divide between the Little North Fork of the Santiam River and Butte Creek and the Clackamas and Molalla River drainage systems, and on the East by the summit of the Cascade Mountains. The south boundary follows a line which is roughly east and west through Sweet Home, Oregon. This line is the common boundary between the Salem and Eugene District areas of responsibility.

II. Internal Physiographic Features and Climate

The two land forms of the Master Unit include a portion of the Willamette Valley and the Cascade Mountain range. This range builds up gradually from the valley floor an average of 10-15 miles east of the Willamette River to the crest, an average distance of 65 miles east of the Willamette River. Forest Service lands occupy generally the eastern 25 miles of this area which includes mostly the higher elevation areas of the Cascade Mountains. The National Land Reserve lands occupy the area between the valley floor and the Forest Service boundaries. This generally is low and medium elevation, highsite lands.

Elevations in the unit vary from 150 to over 10,000 feet, but average about 2,500 feet.

There are no significant bodies of water in the Master Unit on National Land Reserve lands. Construction of Green Peter Dam is now in progress which will create a reservoir partially within National Land Reserve lands.

The Master Unit includes most of Marion County and the northern 2/3 of Linn County.

The climate progresses in severity from the western valley area which is mild and suitable for a large variety of farm crops such as grain, berries, orchard fruits, and most vegetables to the high mountain areas above the timber line. Weather extremes occur only when the mild ocean tempered west winds cease, and the area is dominated by continental air. Precipitation ranges from 35 inches in the valley to over 100 in the higher mountains.

III. Social Factors

On the Santiam Master Unit, population is centered mainly along 3 major river valleys. These are the South Santiam and North Santiam River Valleys, and the Willamette Valley. This is generally an urban population distributed in or near the Towns of Mt. Angel, Silverton, Salem,

Roland Lee
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Turner, Stayton, Mill City, Albany, Lebanon, Brownsville, Sweet Home, and Foster.

The total population, according to 1960 census figures, within the Master Unit approximates 165,000. Salem, the State Capitol, is also the principle city of the Master Unit. The population at present is 49,142. The population within a 10-mile radius is estimated to be 99,000.

There has been no large or rapid changes in population in the last 10 years. However the population of the area is steadily increasing, and the internal trend is from the rural areas to the cities. This is a result of consolidation of farm holdings caused by economic considerations.

There are no major ethnic or social groups in the area. A large majority of the population is of northern European decent. The non-caucasian population numbers about 1% of the total.

The labor supply in the Master Unit has never been short. Unemployment, however, is a problem due to the seasonal nature of the major industries, namely, food production and lumber. There are great fluctuations in the caneries which peak in June and August. The logging and lumber manufacturing industry is at full production during the summer months with lengthy layoffs in the winter and during periods of low demand for timber products. A large number of the woods workers live on small farms and use this means to stabilize their income. This practice also helps keep the unemployment problem from being excessive.

The food producing industry utilizes a large amount of migrant labor each season.

IV. General Economic Factors

AGRICULTURE

The farms of the Master Unit produce a wide variety of crops. The farm products derived naturally falls into 4 catagories. (1) River bottom food producing areas (2) upland grain crops (3) low hill orchard and berry crops and, (4) cattle and sheep production on the low site lands throughout the valley. Along the rich river bottom ground, the major crops are, beans, hops, cabbage, lettuce, asparagus, carrots, mint, and many more of the vegetable types. In the uplands, grain and hay crops predominate such as wheat, barley, oats, vetch, corn, alfalfa, and grass seed. The low hills are largely suited to orchard crops such as, cherries, apples, prunes, peaches, walnuts, and filberts. Intermingled with these cultivated crop areas are the extensive acreages of marginal hilly agricultural lands which are used mainly as pasture. There has been a large increase in sheep and wool production. A new woolen mill

has been established in the Jefferson-Scio area.

The climate of the Master Unit is greatly modified by the prevailing westerly winds from the Pacific Ocean. The average annual precipitation ranges from 35 inches in the valley to 100 inches in the higher mountains. Rainfall is usually abundant 8 months of the year, and the months of July through October are usually very dry.

Snowfall in the valley area is very light and temperatures rarely drop below 20° F.

The growing season varies widely depending on elevation. For the most part, the frost-free season for the valley area is from April through October 15.

Soils within the Master Unit are generally of basaltic parent material and vary from deep sandy and silt loam of the rain bottom to heavier clay and rocky soils of the foothills. Erosion does not present a large problem in the flat areas of the valley floor and observation has not revealed any widespread erosion areas even in the hilly marginal lands.

FOREST PRODUCTS

By far the most common and major timber user in this Master Unit is the sawmill with its various utilization facilities. They range all the way from small portable mills, which market rough-sawn boards only to large diversified plants cutting as much as 165 M per day. Most of the larger plants have installed chippers to turn waste into raw material for neighboring paper mills. There are two fibre and chipboard plants, two handle factories, a furniture plant which utilizes Oregon Maple and various woodworking plants turning out specialty items. Specifically, there are 41 sawmills with an annual capacity of 465 MMBM, 10 plywood plants with an annual capacity of 695 MM square feet, 3 paper plants, and 30 other varied manufacturing and remanufacturing facilities which include planing, remilling, handle stack, furniture, presto-logs, moulding and door milling, box factories, and shingle mills.

Private stumpage is in short supply. Most of the manufacturing facilities in the unit are dependent either wholly or to a significant percentage on federal stumpage. In some cases, the federal stumpage is used as a buffer to extend the cutting period of the private holdings. Most of the large companies are actively purchasing cutover and second growth stands which will produce crops 60-80 years hence. However, most cutting practices, even on some large holdings, appear to be on a relatively fast liquidation basis. The annual growing capacity is not sufficient, even with increased utilization, to sustain the cutting capacity of industry. The large companies are here to stay and can probably maintain a high level of production by converting gradually to more diversified products thus utilizing hither to waste materials.

Small farm wood lots are numerous and when combined form a sizeable acreage. How much these can be depended on to help sustain the industry is debatable. Most private forest land in holdings larger than the farm wood lot class, but still in the classification of a small holding, have been cut out. Some of these stands, however, are supporting good young stands of second growth and will be very important in the near future.

RANGE LIVESTOCK

The livestock raised in the Master Unit are mainly sheep and beef cattle. There are very few ranches that depend solely on one or the other for their income. Rather, the livestock raising appears to be a sideline which enables the complete utilization of all the land of the farm unit.

RECREATION

Because of the concentration of population in the Willamette Valley and the close proximity of outstanding recreation areas, a large portion of this activity is from local residents. The National Land Reserve lands in particular are close enough to population centers to draw the picnicker, swimmer, and other just out for a one day jaunt. The Mt. Jefferson wilderness area plus the spectacular scenery in the near vicinity draws people from long distances.

Out of area recreationists are abundant throughout the unit. This is evident by the large percentage of out-of-state licenses seen on vehicles from June through September. All available camp grounds are taxed to the limit.

Hunting and fishing can be classified as good. Rivers and small lakes are abundant. In practically all the cutover and reforesting lands, the deer population is too high and much damage results because in order to survive, they eat the young Douglas-fir seedlings.

Boating is fast becoming a major form of recreation. The most important bodies of water for this purpose are the Willamette River and Detroit Reservoir backed up by Detroit Dam. This reservoir is approximately 8 miles long and 1½ miles wide at the widest point.

The Hoodoo Ski-Bowl is in the extreme southeast corner of the Santiam River Master Unit and affords excellent skiing 5 months of the year.

Demand for recreation facilities such as picnic and camping areas is being felt very strongly now. Present facilities are completely inadequate and much effort and money must be made available if the demand is to be met. Three recreation areas are in the construction phase now on National Land Reserve lands and plans are underway for many more.

MINING

Mining is almost nil in the master unit. At one time it had some importance as gold was discovered in paying quantities in the Quartzville drainage. However, inflation has made this an unprofitable venture in that area and no mines are operating at present.

INDUSTRY

The industry of the master unit is closely tied to the available natural and agricultural resources of the area. The food canning and processing industry and wood products industry constitute almost all the present industrial development.

A source of employment not previously mentioned which is very important to the economy of the Salem area is the State Government and operation of the many state institutions. The offices and institutions in Salem and surrounding area are as follows: State government, State Hospital, State Library, State Prison, Tuberculosis Hospital, the intermediate first-offender penitentiary, Highway Department, Forestry Department, and many others. Altogether there are approximately 8,750 employees of the State of Oregon living in the Salem area.

TRANSPORTATION SYSTEMS

The master unit is served by two major arterial U.S. Highways and two major State Highways. U.S. 99E runs north and south on the east side of the Willamette River through Salem and Albany; U.S. 20 runs east from Albany through Lebanon, Sweet Home and Foster; State Highway 22 runs east from Salem through Mill City, Detroit and connects with U.S. 20, 12 miles west of the Santiam Pass; and State Highway 211 from Salem northeast through Silverton and Molalla. These highways plus a good network of tributary State and County roads serve the bulk of the local transportation needs.

There are two major railroad systems within the master unit. The most extensive is the Southern Pacific line, the main trunk of which runs from Portland south through the Willamette Valley. Branches serve as far east as Idanha on the North Santiam and the Oregon Electric Railway system serves Sweet Home and Foster.

Both West Coast and United Airlines have regular stops at Salem Municipal Airport. This is the only city in the master unit served by commercial airlines.

There are no proposed roads at present in the Santiam River Master Unit.

ENERGY SYSTEMS

Electricity in the entire Santiam River Master Unit is served mainly by the Bonneville Power System. The closest source of power in this system is Detroit Dam and its reregulating dam. This dam is located approximately 45 miles southeast of Salem in the North Santiam River. The Green Peter Dam on the Middle Fork, Santiam River, is now under construction and will produce additional public power in about four to five years.

A natural gas pipe line, having its source in Canada, serves the major metropolitan areas of the Willamette Valley.

WATER

Generally, it can be said that water is abundant year around in the master unit. Along the streams of the valley extensive irrigation by pump and sprinkler systems is carried on in order to grow specialty crops. Grain crops on higher ground do well except in occasionally extremely dry summers.

The rainfall of from 35 to 100 inches comes primarily from November through May with very small amounts the remainder of the year

PUBLIC WORKS PROJECTS

The Corps of Engineers is presently constructing the Green Peter Dam on the Middle Fork Santiam River. There will also be an accompanying reregulating dam near Foster on the South Fork Santiam River. This project will provide water storage, recreation, flood control, and electric power.

LABOR UNIONS AND FARM COOPERATIVES

The strongest union in this area is the AFL-CIO Woodworkers Union. Most of the medium and large lumber and logging operations are unionized; however, there seems to be little agitation to spread to smaller operations. Approximately every two or three years a general strike is called.

The Grange and Farmers' cooperative groups are very strong and influential in legislative affairs.

LOCAL PLANNING GROUPS

The counties of the Santiam River Master Unit have active planning commissions. Also, there is a Mid-Willamette Valley Planning Commission which among other things helps coordinate the planning activities of the area.

PUBLIC INSTITUTIONS

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A partial list of Public Institutions was mentioned previously, however, a complete list is as follows: Blind School, Correctional Institution, Deaf School, Fairview Home, Hillcrest School, State Hospital, State Library, State Penitentiary, Tuberculosis Hospital, and Chemawa Indian School. The latter is administered by U. S. Bureau of Indian Affairs.

V. Lands

Federal jurisdiction in this master unit from the standpoint of economic influence is about equal between the BLM and Forest Service. A portion of the Willamette National Forest is located within the master unit.

There are 90,910 acres of Oregon and California Revested lands and 3,134 acres of Public Domain lands within the Santiam River Master Unit.

The O&C and P.D. lands within the master unit are highly productive forest lands capable of producing considerable value per acre in terms of timber stumpage.

Withdrawals are not extensive. The Middle Fork Santiam and Quartzville drainages have both power site and recreation withdrawals at present.

The State of Oregon has extensive ownership in the Santiam River Master Unit. This land is located in the North Fork Santiam drainage between BLM and Forest Service lands.

There are two major private land owners within the master unit. These are Willamette Valley Lumber Company and the Louis W. Hill Foundation. The latter lands are checker-boarded through the southern part of the master unit as a result of a railroad grant.

The National Land Reserve within the Santiam River Master Unit is all classified for timber production. The small acreages which exist in or near the valley are too steep or rocky for agricultural use. The Oregon and California Revested Lands are widely scattered as a result of the original land grant pattern except in a few places where exchanges have enabled consolidation of ownership. The Public Domain lands are also scattered and in no instance constitute a solid block.

The basic use of these lands just described is timber production. However, it is a goal to do this in coordination with all the other use considerations such as water, recreation, mining, and grazing.

USE AND DEMAND FOR BLM LAND

The heaviest demand placed on the lands is timber production, but these other uses are being felt very keenly. Recreation groups are exerting heavy pressure to set aside large acreages of land purely for recreational use.

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AGRICULTURE

As has been stated, no tillable agricultural land exists in the master unit. The timber and brush types found in this area do not lend themselves to grazing use. Our aim is full timber production on every acre, and due to the dense forest cover and ruggedness of topography these areas will not sustain grazing animals. At present there are no active grazing leases.

FORESTRY

The timber stands of the Santiam River Master Unit consist mainly of Douglas-fir with associated minor species such as western hemlock, noble fir, silver fir, western redcedar and western white pine. An inventory, just completed, reveals the following distribution of stand classes:

Mature (90 years +) -----------	42,297 A.
Immature ...--------------------	42,823 A.
Non-stocked --------------------	4,675 A.
Hardwood ...--------------------	2,458 A.
Non-forest -----------------	1,791 A.
total	94,044 Acres

The annual allowable cut of the master unit is 60.7 MM board feet and represents approximately 6% of the industry milling capacity. The allowable cut is being offered for sale each year besides a portion of salvage timber from old logged areas. This relogging is an attempt to realize these residual values and at the same time clean up the areas and placing them into full production. Also, a thinning program has been instituted which will glean values from the young stands previously lost to normal mortality and increase growth on the remaining trees. This thinning and salvage volume produces at least 10 MM board feet yearly which is supplemental to the allowable cut.

The scattered nature of the lands creates a tremendous access problem. Concentrated efforts to obtain permanent rights have been in effect for many years and progress is definitely being made. About 40 miles of access roads have been constructed within the master unit with appropriated funds. Hundreds of miles of timber sale roads have been constructed under terms of timber sale contracts. Concentrated efforts in this direction for a few more years will pretty well develop the entire ownership.

Forest fire protection is provided via an agreement with the State of Oregon, which does a very effective job of protecting all lands within their jurisdiction. Also, very strict fire stipulations are placed in timber sale contracts which are easily adhered to. A district fire plan is in effect and numerous employees are on stand-by each weekend during the fire season.

A major problem in the master unit is to achieve full production of timber on every acre so suited. Because of the abundant rainfall, brush, following cutting, is a real problem.

2 Another problem is the pattern of land ownership. If, through exchanges, the land could be consolidated it would greatly facilitate management.

MINERALS

There is virtually no mineral activity. The lands are not highly mineralized and where it does exist is usually not on a paying basis. Recreation withdrawals were placed along the Quartzville canyon in time to minimize the problem of mining claims on recreation sites.

WATER

Most water derived from BLM lands forms a part of the water supply for many communities along the Santiam River. A significant number of the tributary streams in this drainage system have their origin on these lands. Every effort is made to keep the logging activity from unduly disturbing the streams. Clearance of logging debris from streams is a part of every contract and the natural flow of the stream is restored as nearly as practicable following logging.

RECREATION AND WILDLIFE

BLM lands within the Santiam River Master Unit will figure very significantly in the recreation picture in the near future. The location of BLM lands close to metropolitan areas make them ideal for the local recreationist, as well as the out-of-area tourist. The most popular areas are as follows:

Little North Fork - Santiam River - This area is within 35 miles of the Salem area and served by excellent roads. The crystal clear stream plus beautiful surroundings of primarily second-growth Douglas-fir, makes this an ideal spot. A typical summer weekend finds literally hundreds of people along this river. BLM lands make up a large percentage of this river frontage. At present, BLM has leased an area to Marion County for development of a combined picnic and over-night camping area. The BLM has another area under construction which will serve both campers and local picnicers. A third area is well along in the planning steps and soon will be in effect. A recent recreation survey showed approximately 20 separate areas which have some recreation potential in the North Fork Santiam Drainage.

Middle Fork Santiam and Quartzville Creek - These areas in the southern portion of the master unit will also be ideal recreation areas. Green Peter Dam, now under construction, will back up a reservoir approximately ten miles into both Quartzville and the Middle Fork Canyons. It has been estimated that BLM lands can provide ten recreation sites along this reservoir and up the Quartzville Canyon. One area, Dogwood Park, had just recently been dedicated and is already receiving heavy usage.

Fishing is now good in both these areas and will definitely increase when the reservoir is completed.

Big game hunting is an important usage in the Santiam Master Unit. The deer population is very large and access good. Private landowners generally

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cooperate very well and will only lock people out if they think weather conditions are dry enough that a fire danger exists. Game birds, quail, ducks, grouse, and pigeons are hunted, but are relatively minor compared to deer hunting and angling.

The deer population is heavy enough in some areas that they are creating a real threat to survival of our reforestation efforts. These populations are increasing despite heavy hunting and some solution may be a necessity very shortly.

COMMERCIAL, INDUSTRIAL, OR URBAN DEVELOPMENT

In the Santiam River Master Unit there are no National Land Reserve lands in home site development. The lands are generally sufficiently far from population centers that no commercial or industrial development is foreseen at this time. It is possible that at some future time there could be pressure exerted for commercial enterprises along the Green Peter Reservoir frontage.

VI. Conclusions

1. The National Land Reserve, administered by the BLM consists of about 10% of the total forest acreage in the Santiam River Master Unit. The actual timber production from these lands is much higher in ratio to its land area. The reasons for this being possible, in conformity with the principles of sustained yield, are that the lands are generally well stocked, highly productive from the aspect of favorable soils, and elevation ranges, and intensively managed to recover as much salvage and mortality volume as possible with limitation of funds and personnel. This volume of forest products contributes very significantly to the industrial economy of the unit. In addition, 75% of the annual gross O&C receipts of about $1,500,000 and 25% of the annual Public Domain receipts of about $25,000 is returned to the counties according to statute.

2. Coordinated with this annual timber harvest is the recreational contribution of these National Land Reserve lands. In the Santiam River Master Unit, one park area has been completed, two are in the construction phase, and several others are planned for development in the near future. A recent recreation inventory shows about 30 such areas suitable for future development. The contribution of these lands to city, county, and State park areas is considerable.

3. Hunting and fishing in these areas is enjoyed by thousands of sportsmen.

4. The fact that these lands are managed with a deep feeling of responsibility to all uses, timber, water, recreation, and many other minor uses is in itself of great benefit to local communities as well as the general public.

5. The present concentrated population has placed high demands upon these lands and in view of the future increases in population, intensive planning and development are necessary at this time.

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6. Timber is in short supply at the present time. Demands for timber volumes in the future are going to increase as private stumpage reserves dwindle and the timber industry becomes more dependent on the public supply. This situation will call for greater intensity of management in all phases of forestry. Cutting methods must be found to harvest mortality and adequately thin young growth stands which occupy the steeper slopes in order to increase growth on these areas. Other methods of obtaining all possible volume from each acre must be studied. Above all, a sound, active rehabilitation program must be maintained and strengthened in an attempt to get every acre at peak production. Only in this way can the future demands be met.

7. To continue to improve this vital program the land tenure must be maintained in Federal ownership to insure balanced and coordinated usage of all the lands. Pressures from specialty groups for set-asides or any attempt to withdraw portions of lands for specific purposes must be firmly opposed.

8. Exchanges of land with private and other public groups must be initiated to block up the National Land Reserve lands in order to create greater efficiency of management and to allow their greater use by more of the general public.

9. Larger appropriations and more well-trained personnel will be needed to carry out such a program geared to meet the demands of the future.

The Bureau of Land Management, as such, is a young organization and even in this relatively short period of time has demonstrated its ability to manage the National Land Reserve in a manner which insures balanced usage. This progressive attitude will continue to insure that these lands, through balanced usage, carry their share in supporting the welfare and economy of the Santiam River Master Unit.

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1960	Population, 1960	Dept. of Commerce

EUGENE

UPPER WILLAMETTE

Master Unit Classification Study
Upper Willamette Master Unit

Initial Analysis

Location

The Upper Willamette Classification Study Master Unit lies largely in that part of Lane County, Oregon east of the Willamette River. However, there is a portion of Douglas County in the southern edge of the unit, and a portion of Linn County on the north.

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The Western boundary of the unit is the Willamette River from its junction with the south boundary of T. 13 S., Will. Mer., southward along that river and its tributary, the Coast Fork, to the point 3 miles south of Cottage Grove, Oregon, where the Coast Fork river intersects the boundary of the Upper Willamette Sustained Yield Master Unit in Sec. 16, T. 21 S., R. 3 W. This latter unit was established by Order of the Secretary of the Interior #2390, dated November 29, 1947.

The boundary then runs southward some 12 to 15 miles along the Sustained Yield Unit boundary, which also forms the division between the Eugene and Roseburg Districts and is near the drainage divide between eastward and westward flowing streams.

The boundary then turns eastward along the division between the two Districts, which coincides closely to the Calapooya divide, and at the SE corner of T. 23 S., R. 1 W., Will. Mer., the southern boundary is the township line. This extends eastward until the crest of the Cascade Range is reached. This crest forms the eastern boundary of the unit, which extends northward to the south boundary of T. 13 S. The north boundary of the unit is this township line, and it extends westward to the Willamette River. Thus the master unit boundaries are a combination of physiographic and cadastral survey boundaries.

Internal Physiographic Features

A. Prominent natural features of this area are the tributaries to the Willamette River. It is within this area that the main Willamette River branches into the Coast Fork and the Middle Fork systems with each of these systems being added to by lesser waterways such as Row River, Fall Creek and Little Fall Creek, and the McKenzie River, the most widely known river in this portion of Oregon.

B. Artificial lakes built primarily for flood control purposes and for some limited power production are common to this area, being found on all of the larger rivers. Still others are proposed, some of which will impound waters in relatively small drainages, as is the case with Fern Ridge dam on the Long Tom River just north and west of Eugene. Other reservoirs of note, each of which is subject to heavy recreational use such as picnicking, water-skiing and fishing, are Lookout Point, Dexter, Cottage Grove and Dorena.

In addition to these, there are numerous natural lakes of various sizes which increase in number as the summit of the Cascades is approached. In this vicinity also are found several widely-known mountain peaks which are prevalent along the Cascade summit. The Three Sisters are examples. These and the numerous lakes in this vicinity provide many man-hours of recreation each year for hikers, campers, fishermen and hunters.

57 C. Elevation varies considerably, being at a low of about 400' in the valley portions along the western boundary of this study area, and increasing to the summit of the Cascades where high points are approximately 10,400 feet in elevation. A good average elevation for this area would be about 2,500 feet.

Social Factors

A. Population

The Upper Willamette Classification Study Master Unit is located primarily in the eastern half of Lane County. Because of its location in respect to the entire county, the effects of any social or general economic factors influenced by this Master Unit are felt by the entire County. For this reason, the presentation of social and general economic conditions are based on County-wide analysis.

The principal cities and their populations in Lane County are:

Eugene	50,997
Springfield	19,616
Cottage Grove	4,200
Junction City	1,600
Florence	1,750
Oakridge	2,125
Total Population Lane County	162,890 1/

As noted in the following statistics, the population of Lane County is increasing. 2/

	Eugene	Springfield	City Zone	County
Total Population (1960 U. S. Census)	50,977	19,616	120,000	162,890
Total Population, 1950	35,879	10,807	71,622	125,766
Total Population, 1943	26,200	N.A.	N.A.	72,300
Total Trading Area, 1960	All of Lane County plus portions of Coos, Douglas, Linn and Benton Counties			
Number of Families, 1960	16,300	5,900		52,000

Several reasons have been advanced for this increase of Lane County population the most prominent being that the Eugene area is becoming a service area for central and southern Oregon. Because of this, many industries and service organizations are moving from Portland to the Eugene metropolitan area.

The growth of Eugene and Lane County is further reflected in the building permits for new homes over the past 15 years issued by the County and City Building Departments.[3]

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	City	County, Excluding Incorporated Cities
1960	409	781
1959	375	740
1958	261	565
1955	217	757
1950-52	1,171	N.A.
1945-50	2,583	14,055

B. Labor

There is an adequate supply of local labor in the Lane County area. The labor conditions of the County for the year ending September 30, 1960 were as follows: [4]

Occupations by major groups -

Agriculture, fishing, forestry	136
Mining	232
Construction	2,972
Manufacturing	16,153
Food	1,362
Lumber	13,480
Transportation, Communications, Electric, Gas and Sanitary Services	1,668
Interstate Railway	1,360
Wholesale and Retail Trade	8,459
Finance, Insurance, Real Estate	804
Service	3,071
Governments	2,656

Figures do not include city and county employees, most of those employed in agriculture and other categories not covered by unemployment compensation. OSES estimates that 60 percent of all employees are covered and 40 percent not covered.

In September 1960 there were 13,416 persons employed in the forest industries of the County, drawing an annual payroll of over $72 million. This employment represents 83 percent of covered employment and payroll of all manufacturing industries and 52 percent of the total covered payroll and employment in the County. In September, 1960 employment in the forest industries was broken down as follows:

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Operation	No. Employed	Percent
Logging Operations	2,368	17
Sawmill	5,114	41
Veneer, Plywood	5,085	40
Miscellaneous	849	20
Total employed-lumber Industry	13,416	

Annual Lumber Payroll, Lane County for year ending September 30, 1960. . . . $72,319,009.00 [5]

The one major problem connected with employment in the forest industries is the seasonal fluctuations caused by local weather and national economic conditions. During the spring of 1961 12% of the total work force was unemployed during the peak of the off-season work.

There is very little migrant worker influx in the Eugene-Lane County area. During the 1960 peak employment month of August, the Oregon State Employment Service made spot checks of all industry and found only .5% of the total employed as being migrant workers.

General Economic Factors

A. Basic income-producing occupations

The Eugene-Springfield Area because of its growth has developed into the second largest marketing area of Oregon and the fifth largest marketing area in the Pacific Northwest. [6]

1. Agriculture

In Lane County agriculture ranks second as an industry. Here will be found many types of soil on which, with our mild climate and long growing season, it is possible to grow a wide variety of agricultural products. Many are extensively grown by Lane County farmers and processed in Lane County. With fine cooperative marketing and excellent transportation facilities, farmers and ranchers with good management have prospered in dairy, beef cattle, sheep, swine and poultry enterprises as well as horticulture and grain crops.

In 1960 there were 3,004 farms in Lane County averaging 122 acres each; total land in farms is 365,310 acres valued with improvements at $105,848,573. Ninety percent of the farms in Lane County are owned by the operators. Total Lane County gross farm marketing in 1960 was $19,472,157. Farm population, according to the 1959 Federal Farm Census, was 13,000. We have in Lane County in the Eugene area an average growing season of 205 days. Average January temperature, 40.1 degrees; average July temperature, 65.9 degrees. The average annual rainfall at Eugene is 37.88 inches; average number of cloudy days, 198; average number of clear and partly cloudy days, 178; average number of days per year with maximum temperature of 90 degrees or above, 3; average days per year with trace of snow, 6; average number of days with minimum temperature of 32 degrees or below, 48; killing frost data: earliest in the Autumn, November 4; latest in the Spring, April 13.[7] 60

The following Lane County farm data was collected during the 1959 Farm Census taken by the Lane County Agricultural Agent:

	Farm Population (1959 Estimate)	13,600
	Number Farms, 1959	3,004
	Total Farm Land, 1959	365,310 acres
	Average Size of Farm, 1959	121.6 acres
	Farms with Television, 1957	1,229
	Farms with Tractors, 1959	2,438
	Farms with Telephones, 1959	2,719
	Farms with Electricity	3,004
Farms by Economic Class	Class I (value of products sold, $40,000 or more)	53 farms
	Class II (value of products sold, $20,000 to $39,999)	173 farms
	Class III (value of products sold, $10,000 to $19,999)	254 farms
	Class IV (value of products sold, $5,000 to $9,999)	278 farms
	Class V (value of products sold, $2,500 to $4,999)	314 farms
	Class VI (value of products sold, $50 to $2,499)	536 farms
	Other farms	1,809 farms

2. Forest products

The forest products industries of Lane County consist of the following:

a. Lumber Industry

Lumber manufacture dominates among the County's present forest industries with a total of 141 sawmills, 99 stationary mills, 42 portable mills operated during 1955. Collectively these mills produced 1,300 MM bd. ft. The stationary mill accounted for 98 percent of this volume.

b. Veneer and Plywood Industry
Lane County's veneer and plywood industry in 1955 was comprised of 19 plants. Eight of the plants produced green veneer only and sold their products in that form. There were six layup plants that did no peeling but purchased green veneer. Five complete plywood plants peeled their own green veneer. A total of 626 million square feet of green veneer was produced in 1955.

61 c. Pulp and Paper Industry
The County has only one pulp and paper plant but it is of large capacity and ranks as a major segment of the local forest industry. The pulp plant uses the sulfate process and has rated 24-hour capacity of 375 tons. Raw material consists entirely of chip, most of the volume of which is converted from mill residues developed in sawmill and plywood plants. Some chips are made from defective logs.

d. Shingle Industry.
Six shingle mills operated in the County in 1955. Two of these mills were operated in connection with sawmills making western redcedar lumber. Reported total production during that year was 179,000 squares of shingles.

More than 75 per cent of the rail tonnage originating in the County is lumber and timber products. 1,300,000,000 board feet of timber is manufactured in the County annually, and standing merchantable timber is estimated at 97 billion board feet.

Each year a greater percentage of private timber holdings are cut in Lane County without provisions being made to reforest most of these areas. As the private forest reserves dwindle, greater demands will be made upon the public agencies to supply the raw materials needed to keep the lumber and allied industries stable. This can only be accomplished through the retention of the full public forest reserve and the management of these lands on a sustained-yield multiple use program. The disposal of any part of the public forest reserve will result in a reduced amount of timber available to the forest industry in this area and would directly affect the general economy of Lane County and of Oregon.

The feelings of Land County residents in terms of the
forest resources were expressed in an editorial in the
Eugene Register-Guard on August 9, 1959. In commenting
on the purchase of the Booth Kelly Lumber Company by the
Georgia-Pacific Corporation, the editorial stated:
"Lane County residents are more than bystanders in the drama
of high finances which last month saw Georgia-Pacific
62 Corporation win control of the vast Booth-Kelly holdings
in Lane County. And because the area's economy is tied
so closely to the lumber industry, Georgia-Pacific's
policies in administering the estimated 3½ billion board
feet of timber on the Booth-Kelly lands will have important
effects on the community's industrial future.

A sound, sustained-yield program would mean a continuing payroll for years to come, plus stable tax returns.

Quick liquidation of the timber holdings would mean a short-term surge in the economy, followed by fewer jobs and a lessened county tax base."

3. Range livestock

In the Upper Willamette Master Unit there are several livestock operations that are working as an independent economic unit. These operators are somewhat dependent upon use of the National Reserve for part of their grazing lands.

The majority of the livestock operations are not an independent economic unit in themselves and outside supplemental income is required to sustain the operator. These operators are generally in this dual type of operation because of the availability of grazing on or adjacent to their home which affords inexpensive feed to sustain their livestock.

4. Recreation

The Master Unit attracts recreational visitors from out of the area as well as local residents. The period of use is generally in the summer months, but additional use is encountered during winter, fall, and spring.

The type of recreational use of the area is very diversified--a few of these are:

a. Tourists - Tourist traffic on the main highways in the Master Unit brings many in contact with the excellent recreational facilities and natural and rugged scenery of Western Oregon.

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b. Hunting and fishing is done by many local and out of area people. The McKenzie River is nationally known for its quality of trout and salmon fishing. Many other streams and reservoirs of lesser prominence but equal quality exist in this area. A large herd of black tail deer live in this Master Unit and are harvested each fall in large numbers by Oregon hunters. Because of management problems in places this herd does considerable damage to reforestation projects.

c. Boating - With five flood control and power dams now in operation in the Master Unit and four more under construction, a heavy increase in small boating has occurred in Lane County. Besides the reservoirs, there are many lakes and rivers that are used by the boating enthusiast. The Lane County Sheriff's Office reports that 3,855 boats were registered in Lane County on June 1, 1961. Because of the availability of good water, interest in water skiing is gaining rapidly.

d. Winter sports - One winter ski area is presently in operation in the Master Unit. This is the Willamette Pass Ski Area on the Willamette Pass on U.S. Highway 58. Its use is confined generally to local use rather than by out of area skiers.

e. Hiking - The eastern portion of the Master Unit is composed of one of the better known wilderness areas of the West Coast, the Three Sisters National Wilderness Area. This area embraces some of the most rugged terrain of the Cascade Mountains and many novice mountain climbers have gained experience on Mt. Washington, North Sister, Middle Sister, or South Sister.

As the population of the West increases, the demand for recreational outlets becomes heavier yearly. In their book "Plan 62" the Lane County Parks and Recreation Commission surveyed the present and future needs for recreation facilities in Lane County and summarized by stating:

64 "In 1957 there were an estimated 1,598,000 recreation visits to developed facilities available to the public in Lane County. This number of visits would require 2,092 picnic-camping units. As only 1,578 are available, there is an indicated shortage of 434 units. Forest Service and State Parks plans indicate about 512 units will be added by 1962. However, usage will probably have increased to 2,556,000 visits in 1962, requiring 3,219 units. Thus, there is an anticipated shortage of 2,090 picnic and camping units at the end of five years."

It is indicated in this report that one of the greatest needs for new development of recreation facilities exists in this Master Unit.

5. Mining

Mining is of no significant importance in this Master Unit, although considerable activity has taken place in The Bohemia Area in the Southern part of the unit.

6. Industry other than those above

As the Eugene area becomes further known as a service area for the Central Willamette Valley Area and Southern Oregon, more service and retail outlets will be established in the Eugene-Lane County Area.

Transportation Systems

Transportation systems in Lane County are:

- Intercity Lines -
  - Greyhound, Trailways
- Railways -
  - Southern Pacific, Oregon Electric R.R., S.P. and S., Great Northern, Northern Pacific
- 65 Airlines -
  - United Air Lines, West Coast Air Lines
  - Cascade Air Lines (Non-schedule)
- Truck Lines -
  - 17 major truck lines serve the Eugene Area.
- Highways -
  - U.S. 99 (Interstate 5 Freeway)
  - U.S. 99 West
  - U.S. 126
  - State 36, 38, 58
  - County Trunk Roads - 6

Energy Systems

Energy systems that service the greater portion of Lane County are:

- Municipal
  - Eugene Water and Electric Board
  - Springfield Municipal Power
- Federal
  - Bonneville Power Administration
  - R.E.A. - Lane Electric
- Private
  - Pacific Telephone and Telegraph
  - Pacific Power and Light
  - Northwest Natural Gas Co.
  - Lane County Electric Co-op
  - Blachly-Lane Co. Co-op Electric Assn.
  - Western Union

Water

In describing the water resources of Lane County, the Lane County Planning Commission states:

> "Lane County has been blessed with an above average supply of surface water. Until very recent years this apparent abundance was taken for granted, but it is now being recognized that the future development and prosperity
> 66 of Lane County is dependent upon the orderly development and utilization of this all-important resource. Surface water now provides and in the future will play a more important role as a basic source for electrical energy, irrigation for agricultural lands, sport fishing, recreation, transportation and urban domestic needs.
>
> "When one natural resource provides or is capable of providing so many services to mankind, determination of proper utilization becomes a paramount issue. Conflict of users is inevitable but can be minimized by thoroughly studying the potentials of such a resource and scheduling its use to meet the various needs for optimum county development. It is neither desirable, practical, nor necessary to preserve every stream in its natural state, but neither is it desirable nor in the best economic interests of Lane County to destroy the better scenic areas for the sake of an acre foot of water or a kilowatt of power. True values must be determined on thorough analysis based, not on expediency, but rather on long range requirements scheduled to achieve the economic and social environment to which we, the citizens aspire.
>
> "Unlike the Columbia River, the Willamette basin and coastal streams flow to capacity during the winter months and decrease greatly during the dry summer months. This is due to the limited drainage basin within the higher snow retaining altitudes, and the moderate climate with very few days of subfreezing weather. Therefore, one of the basic needs for Lane County is a series of dams to reduce winter flood damage and retain water to give a more adequate supply during the summer months. This program is being energetically pursued by the Corps of Army Engineers."

As can be seen by the following list of existing and proposed dams, Lane County has an above average potential in water resources.

RESERVOIR CAPACITY, HYDROELECTIRIC POWER AND STEAM: PLAN GENERATION OF EXISTING AND PROPOSED DAMS 8/

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Reservoir	Water Storage In Acre Feet	Existing Generating Capacity in KW Normal	Existing Generating Capacity in KW Min. HydroYr.	Ultimate Electric Power in KW Normal	Ultimate Electric Power in KW Min. Hy.Yr.
Lookout Point	456,000	120,000	73,800	120,000	73,800
Dexter	27,500	15,000	11,500	15,000	11,500
Cottage Grove	32,900	none	none	none	none
Dorena	77,500	none	none	none	none
Fall Creek	115,000	none	none	none	none
Waldo Lake	226,000	none	none	none	none
Fern Ridge	101,200	none	none	none	none
Cougar	219,000	none	none	25,000	18,600
Hills Creek	356,000	none	none	30,000	22,600
Blue River	85,000	none	none	none	none
Gate Creek	50,000	none	none	none	none
Leaburg	Non-effective				
E.W.E.B. Leaburg Power Plant		14,000	5,350	14,000	5,350
E.W.E.B. Walterville Power Plant		9,000	8,600	9,000	8,600
E.W.E.B. Steam Power Plant		32,000	22,000	32,000	32,000

In the Upper Willamette Master Unit, relatively mild temperatures are conducive to long growing seasons. Day-to-night and season-to-season variations are not great. Coldest weather occurs in January or February; warmest in July or August. The average temperature for the Upper Willamette Master Unit is 32-36 degrees in January and 65-70 degrees in July. There are about 110-150 days of frost-free growing season. Frost ordinarily is a surface phenomenon, with even base soil barely frozen to a depth greater than an inch or two. In the coldest parts of the Unit, the snow blanket provides insulation against frost. There are heavy winds occasionally that can cause damage to the forest stand. Cold winter winds may cause damage to the forest stand. Cold winter winds may cause freezing damage to the trees. Humidity is generally high under the influence of moist marine air brought in by prevailing westerly winds. Occasional periods of low humidity accompany northerly or easterly winds. In summer and fall they result in high fire danger. Lightning and glaze storms occasionally occur which can cause damage to the forest stand.

From weather bureau records as quoted by the Lane County Planning Commission, it can be seen that "Rainfall in Lane County shows considerable variation from area to area with an average annual difference, between Canary on the Coast and Eugene in the valley, of
68 some 38 inches. This variation is especially marked during the months of November, December, January, February, and March. Of special interest is the fact that the average annual rainfall of Cottage Grove, our Coast Fork city (elev. 650 feet), exceeds that of Oakridge (elev. 1,310 feet) by some 4.7 inches. The close relationship between Lane County's mountain ranges and rainfall is shown by the map. Snow is an event in the valley and seldom lasts more than a few days at the most. In the high mountain areas snow remains much of the year with depths up to 20 feet. (See "Exhibit A" Average Monthly Precipitation for Five Weather Stations.)

Public Work Projects

The Corps of Engineers has four dams constructed in this Master Unit for flood control, water storage for summer irrigation, and hydroelectric power. They are Cottage Grove Dam on the Coast Fork of the Willamette River, Dorena Dam on Row River, Dexter and Lookout Point Dams on the Middle Fork of the Willamette River. Two additional dams are under construction; the Hills Creek Dam on the Middle Fork of the Willamette River and Cougar Dam on the South Fork of the McKenzie River. Dams are proposed on Fall Creek, Blue River, and Gate Creek in this Master Unit.

The Eugene Water and Electric Board is constructing two dams, commonly known as the Carmen-Smith Project which is developing hydroelectric power on the North Fork of the McKenzie River area.

Labor Unions and Farm Cooperatives

With both industry and agriculture very strong in this area, both labor unions and farm cooperatives are strong. There are over twenty labor locals maintaining offices in Eugene covering such workers as:

1. Lumber and sawmill
2. Cannery
3. Construction
4. Electrical
5. Plumbing
6. Teamsters
7. Carpenters
8. Communications

Farm cooperatives and organizations remain strong in this area. Cooperatives provide one of the major outlets for farm products.

Major outlets for marketing in Eugene are the Eugene Fruit Growers' Association, the Oregon Egg Producers and the Eugene Farmers' Creamery. The largest cooperative market in Eugene is the Eugene Fruit Growers' Association. In 1960 this Association had a payroll of over two million

dollars, and employed from 200 persons during the winter season to over 2,000 in the summer. Their production and packaging of string beans is one of the largest in the country.9/

69 Local Planning and Control Groups

The Lane County area is blanketed with local planning and control groups. Outside of the area of the City of Eugene, most of the control and planning is done by the Lane County organizations under a form of agreement with the various municipalities.

As noted below the Lane County planning setup is a joint affair between county, cities, school and park districts.

The office known as Central Lane County Planning Commission serves as a working agent to the Lane County Planning Commission, City of Eugene Planning Commission, City of Springfield Planning Commission, City of Junction City Planning Commission, School District #4, School District #19, Willamalane Park District and Eugene Water and Electric Board to accomplish collectively for the participating organizations what they cannot afford to do independtly.

The Central Lane County Planning Commission has been in operation since November 1, 1945. It was conceived and brought into being through the efforts of the Central Lane County Planning Council, an unofficial citizens committee.

Since that time approximately 89 square miles of Lane County's 4,594 square miles have been completely zoned (23½ miles within Eugene and Springfield). In addition all land within 800 feet of any school or school site in Lane County is restricted to residential use. Zoning not only covers land use but provides for minimum set-backs for highway widening or the creation of new streets. Other accomplishments include adoption of county-wide Building Code and requiring building permits as a prerequisite to building in all areas. 10/ Efforts of the Planning Commission in the field of urban renewal have been stymied by a vote of the people in both Eugene, Florence and to some extent Springfield. See Exhibit "B" showing organizational chart of Central Lane County Planning Commission.

In addition to the planning commissions, the cities and the county maintain jointly a Board of Health with its various sections. Some of the activities in this field are:

1. Vital Statistics
2. Communicable Disease
3. Maternal and Child Health
4. School Health 70
5. Handicapped Persons
6. Environmental Sanitation
7. Vector Control
8. Mental Health
9. Civil Defense
10. Laboratory Services

The City of Eugene maintains a Milk and Food Inspector, a function usually carried out on the state level.11/

The building departments of the various cities work closely with the Lane County building department which is under the supervision of the County Health Officer. Because of increasing problems of sewage disposal, access, building regulations, etc., the control of these regulatory agencies over new construction has become more pronounced.

Numerous State, County and Federal assistance groups maintain offices within the boundaries of this master unit. The following are the more prominent:

1. Soil Conservation Service
2. General Extension Service
3. Employment Service
4. Welfare Service
5. Veterans Administration
6. Forest Service
7. Industrial Accident Commission
8. Vocational Rehabilitation Service
9. Farmers' Home Administration
10. Social Security Administration
11. Bureau of Land Management
12. Bonneville Power Administration
13. Weather Bureau
14. Public Housing Administration
15. Labor Department
16. Coast Guard

Many other public agencies operating more in a regulatory nature but providing a form of assistance include:

1. Public Utilities Commission
2. State Game Commission
3. State Highway Commission
4. State Police 71
5. Army Engineers
6. Military Reserve organizations of all branches
7. Commerce Department
8. Interstate Airways Communications
9. Safety Regulation Bureau
10. Internal Revenue Deputy
11. Post Office Department

It is quite evident from the number of agencies maintaining offices and branch offices within the boundary of this master unit, that it is a center of importance for local planning, control groups and assistance groups. There is no evidence of a decline in the concentration of public offices in this area. This concentrqtion allows the various agencies to cooperate effectively, to exchange ideas, for personnel to mingle to a maximum and to promote the general effectiveness of all agencies concerned.

Local Public Institutions

The University of Oregon at Eugene is the only state-supported institution of higher learning in the master unit. The Fall enrollment for 1960 at the University was 7,600 students.

State support on a per pupil basis is provided through the various school districts in the following:

Type	Number	No. Pupils	
Elementary	104	31,167	
Junior High	18	10,659	
Senior High	22	10,328	
Vocational (High School)	1	550	12/

Effect of Adjoining States

Competition exists between this master unit and adjoining states in markets for the products and manufactured good produced in the Lane County area. Becuase of an adequate supply of labor, water and electrical power considerable selling of Lane County is being done to attract outside industry to locate here.

Lands

A. Jurisdiction

1. Federal

72 (a) National Forests

Of the total of approximately 2,300,000 acres within this study area, the majority comes under the jurisdiction of the Department of Agriculture acting through the Forest Service. The Willamette and Umpqua National Forests are located here with the greater acreage being within the Willamette Forest. Lands within these National Forest boundaries include both National Forest Lands and the so-called controverted O&C lands.

(b) Bureau of Land Management

Next in order of importance are the O&C and Public Domain lands administered by the Bureau of Land Management. There are approximately 151,000 acres of O&C land and 4,000 acres of vacant public land.

(c) Other Federal Lands

In addition there is a small acreage principally around the numerous listed reservoirs which comes under the jurisdiction of the U.S. Army, Corps of Engineers. There are no Indian lands, National Parks or L.U. lands and only a very small acreage is under a power site withdrawal.

2. Other Public Lands

Other public land would come under State or County jurisdiction but the acreage of either is insignificant.

3. Private Lands

Private holdings represent a sizeable percentage of the total area. Large lumber producing companies such as Weyerhaeuser Company, Georgia-Pacific Timber Company, Giustina Bros. Lumber Co., and Rosboro Lumber Co., are a few and their holdings run into the thousands of acres, and consist, of course, of timber lands.

B. With reference again to Bureau of Land Management lands, these are located in the western portion of this area in the foothills and between the drainages listed previously as being important physiographic features of the area. More specifically, there is a checkerboard pattern to these lands, they being intermingled with land in various private ownership.

C. Use and Demand for Bureau of Land Management Land

1. Agriculture

Use of land administered by the Bureau of Land Management for agricultural purposes is non-existent. While there is an old land classification in existence which indicates that some O&C land is agricultural, this classification was made on the basis of those lands supporting less than 4,000 bd. ft./acre of timber volume. These lands are not agricultural in any other sense, being steep, rough and broken in most all cases. 73

2. Grazing

(a) Grazing, however, is being carried on on these lands. In this classification area there are at present 12 grazing leases involving some 22,600 acres of O&C land.

(b) It is doubtful that BLM lands are essential to a ranch operation. However, under present range laws and with livestock using intermingled private lands little can be done to prevent concomitant use on O&C land.

(c) It must be realized that with respect to Federal lands in western Oregon the term "range" must be defined differently than it is in eastern Oregon. This is not a livestock producing area. While the number of sheep in western Oregon is increasing, use is still concentrated in the valleys and less precipitous foothills, and while grazing use by sheep can be intensified in these areas, there are limitations to this use and certainly limitations to intensive use by cattle. Though considerable acreage of Federal land may be under grazing lease, little comes in for actual use. Much of this land is primarily suited for production of timber and watershed protection and except for areas newly cutover, most acreage supports a dense stand of timber which does not permit the growth of forage favored by livestock. In addition, much of the area has the added limiting factor of being too steep for livestock.

(d) In a sense there is no season of critical use. Lack of nourishment in the green vegetation in winter is a factor in limiting winter use as are snows in some areas. But

it is doubtful that cattle in moderate numbers would harm the forage growth in the spring. However, there is the need to see that spring growth is far enough along so that very young tree seedlings do not come in for extreme attack by livestock.

74 Because of a lack of winter nourishment and a need to protect young tree seedlings, use is limited to the period from about June 1 to October 15.

(e) Conflicting Use

Problems exist where grazing permits issued or unauthorized use results in livestock using newly planted or seeded areas to the detriment of the plans for reforestation of these areas.

3. Forestry

(a) Significance to Local Economy

BLM lands contribute significantly to the local economy. There is an allowable cut of green timber on this classification study are of 75 million bd. ft. annually which is supplemented by an additional cut of timber of thinning age and other relog and salvage timber. All of this timber is located at elevations that for the most part are less than 3,500' so that year round logging free of stoppage from heavy snows can be carried on. As a result, cutting of BLM timber is at an active rate all year long.

(b) Types

The predominant species, of course, is Douglas fir mixed with a more or less small percentage of Western Hemlock, Western Redcedar, Incense Cedar, occasionally some White Fir and at the higher elevations an occasional Sugar Pine, White Pine and even some Silver Fir.

(c) Access

To anyone familiar with the access situation, it is redundant to say it is terrible. It has meant that for years we have been approaching a situation wherein we will no longer enjoy the freedom of planning and timber sale scheduling necessary to good land management. Notwithstanding, a very commendable job of forest land management is being done, but it is extremely urgent that we continue to place extreme emphasis on access acquisition.

By so doing we will be able to intensify management through the indroduction of cutting practices wherein soils, aspect, timber types, etc., are given more consideration than at present.

(d) Protection

75 Protection of BLM lands is handled under contract to the Oregon State Board of Forestry and is made specific to each Western Oregon District, through one or more of the State Protective Associations. Costs of protection amount to 0/20/acre.

(e) Problems

Problems of major concern are those of access, as mentioned previously, and those dealing with reforestation. A considerable acreage of cutover and otherwise denuded land has been planted or seeded since 1957. Much of this work has been supported by the O&C Counties which have returned 1/3 of their receipts from O&C timber sales, for this purpose and for access road construction. The remainder has been done under the terms of timber sale contracts.

Many of these acres are showin good results from our reforestation efforts while some of this work has not shown well. Type of slash burning, similar methods of logging and burning on soils of dissimilar type and condition, and effect of rodents and deer on our seeding and planting efforts must all be evaluated as being detrimental to our reforestation attempts. We must improve our gathering and handling of seed and seedlings and attempt in other ways to make our method of treatment specific to each area with its specific set of conditions.

4. Minerals

(a) Kinds and activity

There never has been any significant mineral activity in Upper Willamette Classification Study Master Unit. A cinnabar mine and a clay mine presently exist on claims on BLM lands. Both these operations are presently inactive though an improvement in market for mercury or firebrick could bring either operation back to production. Generally, however, mineral production is not significant in the local economy.

(b) P.L. 167 Progress

Sine the great majority of the Master Unit does not
76 contain commercial mineral deposits, Public Law 167
examinations have been confined to the few mineral
containing areas where claims were usspected.

(c) Fraudulent Claims

At present there are no known fraudulent mineral claims for recreational or occupancy use.

(d) Conflicts and Other Uses

Conflicts are absent with, of course, the exception of the two small mine sites under lease on which normal timber production cannot be maintained.

(e) Problems

Due to the very small amount of mineral activity, there are no problems of significance at present.

Water

The Master Unit is drained by the McKenzie and Willamette River systems. Volume and quality of water in both these rivers are important for city water supply, irrigation, industrial use and recreation. Generally, these rivers have their headwaters in the higher elevation U.S. Forest Service lands. They then flow down through BLM managed land picking up waste water from smaller tributary streams in this area. BLM land is probably more important in quality control of stream flow rather than volume control. If good watershed practices were not used in harvesting timber on BLM lands a serious siltation problem could occur in the major rivers. Some of the smaller tributary streams flowing through BLM land are important for recreation and here the effects of watershed management on BLM land are more direct.

Recreation and Wildlife

(a) Significance of BLM land

77 At present BLM lands carry a relatively light share of the very great and varied recreational activity of the area which ranges from the family picnic to mountain climbing.

(b) Demand and Use

(1) Now

Generally the more demanding activities such as wilderness camping or mountain climbing are indigenous to the higher Forest Service lands in the Cascades. Family activities for closer in, quickly accessible areas put a heavy demand on State and County parks which are excellent and numerous but quickly becoming inadequate because of increasing population and increasing leisure time.

(2) Future

BLM lands which lay within convenient distance of the areas's population centers should be able to pick up more and more of the overload from local State and County recreation areas.

(c) Developments

Most of the BLM developments would probably be picnic areas. At present none of these have been actually developed in the Master Unit but likely areas have been surveyed and a number have been recommended to be set aside for future development. These sites will be developed as demand grows and it is anticipated that demand will continue to grow at an accelerated rate.

(d) Species of Wildlife

Wildlife is abundant or only slightly less so than the hordes of hunters and fishermen both native and introduced which populate the area during open seasons. BLM lands are probably of greater importance for wildlife habitat than for any other recreational factor at present. Logged over BLM lands make excellent forage areas for Black Tail Deer and forested lands contain many Ruffed and Blue Grouse. Mountain quail are also

found on BLM lands while such introduced species as the Ringneck pheasant and Bobwhite Quail are found more on the lower privately owned agricultural lands. Streams and rivers flowing through BLM land in this area contain large qunatities of rainbow trout, both native and stocked, which provide excellent fly fishing under proper conditions. A rather unique feature is the spring chinook salmon run on the McKenzie and Willamette Rivers which has been providing some very exciting angling each spring to local sport fishermen. Unfortunately, however, this run has been diminishing each year probably due to the construction of more upstream dams whith inadequate fish passage facilities. As more dams are placed on tributary streams more spawning areas will be cut off.

(e) Access Situation

Access to recreational areas is excellent with good road systems over most BLM lands. Many private roads which pass through the intermingled BLM lands are kept open to the public during the hunting season.

(f) Conflicts

Hunting and fishing fit in well with the management of BLM lands for timber production. The only conflict which arises is on set aside recreation areas for camps or picnic areas. Here small areas of timber must be taken out of the harvest inventory but the areas and volume involved should not be significant.

(g) Problems

One large recreation problem which encompasses the whole drainage rather than just BLM lands is the profuse develooment of flood control dams on the McKenzie and Willamette rivers and their tributaries by the U.S. Army Corps of Engineers. The most immediate effect with only a small portion of these dams completed has been the interference with migratory fish and their subsequent depletion. It is also likely that fishable trout water will be greatly reduced by this network of dams. A possible alternative to dam building would be flood plain zoning to alleviate flood damage. This would allow more tributary streams to be left in their natural condition.

Commercial, Industrial, or Urban Development

(a) Demands for BLM Sites

There has been a considerable demand for small tract
leases for summer home sites. However, the BLM does
not have any of these sites classified and available
at present and potential applicants are being referred
to the U.S. Forest Service which has been able to
satisfy these requests from their large stock of small
tract sites. Commercial and industrial development
79 requests have been nil. All of these types of develop-
ment will be given a much lower priority than public
recreation development and we anticipate very little
activity in commercial, industrial or urban development.

Conclusions

The BLM lands which comprise the National Land Reserve in this Master Unit are highly significant to the County, the State and to the Nation. They have multiple use values, including timber production, watershed protection, recreational usage and forage production. These values can best be attained and developed by the retention of such lands for multiple use management by the Bureau of Land Management.

The O&C lands which make up the bulk of the BLM lands in this unit were placed under sustained yield management by the Act of August 28, 1937. By Secretarial Order, No. 2390, dated November 29, 1947, the Upper Willamette Sustained Yield master unit was declared. All the O&C lands were classified as timber producing lands in 1948, and these lands have stable tenure.

Since the Bureau of Land Management lands are in the drainages that flow into the dams and major tributaries of Western Oregon, the proper management of these watersheds is vital.

Recreational use of the National Land Reserve is increasing yearly and through wise development by the BLM will make these areas available to the public.

The other National Land Reserve lands in the study area have similar characteristics to the O&C lands and are intermingled with them. Thus, they should be classified for retention and multiple use management by BLM. In a few instances, private exchanges could improve the overall management. As of July 1, 1961, the sustained yield timber production capacit capacity of the National Land Reserve lands in the Western Oregon units will be calculated on the combined total of all the BLM lands. For the Upper Willamette Area, the allowableannual cut is about 76.6 million board feet valued at about $3,100,000. per year.

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SIUSLAW

MASTER UNIT CLASSIFICATION STUDY
SIUSLAW MASTER UNIT

INITIAL ANALYSIS

The Siuslaw Classification Study Master Unit is located in Western Oregon about midway between Washington and California. It is situated largely in Lane County, but does include some acreage in Douglas County in the Southwest portion of the Unit. It is bounded on the North by Lincoln and Benton Counties, except in T. 15 S., R. 8 W., where the Lobster Creek drainage is excluded, on the East by the Willamette River, and on the West by the Pacific Ocean. The South boundary is the Eugene District boundary with the Coos Bay and Roseburg Districts of the Oregon and California lands administered by the Bureau of Land Management. This boundary is basically between the drainages of the Siuslaw and Smith Rivers but deviates slightly to allow for land patterns and accessibility. The western portion of the southern boundary follows the township line between T. 18 S., and T. 19 S., Willamette Meridian.

This area includes large portions of the drainages of the Siuslaw and Long Tom Rivers and their tributary streams as well as a number of smaller streams which flow directly to the ocean.

The prominent physical features include the coastline with its small inlets and harbors, the seashore with its shifting sand dunes, the Coast Range of mountains and the Willamette Valley. The coastline and seashore are considered to be quite unique in the size and shifting nature of its sand dunes, so much so that serious consideration is being given to reserving this area as a National Park area. The Coast Range runs north and south and dominates the area between the coastal plain and the Willamette Valley. "Topographically, the Coast Range was a regionally flat surface which has been elevated and dissected during the geologically recent past. Most of the larger streams draining this area have cut deep canyons and the original surface of low relief has been cut up into a mountainous topography." 1/ While the topography of the Coast Range is relatively steep, the elevations are not impressive with 2,500 feet being considered quite high in this unit.

Elevations on the Siuslaw Unit range from sea level to a high of 3,400 feet with an average elevation between 1,500 and 2,000 feet. "The Willamette Valley on the East is a topographic low situated between the Coast Range to the West and the Cascades to the East and extends North and South the entire width of the unit. The valley is a flood plain floored with alluvial material deposited from the Willamette River and its tributaries. The valley alluvium is not particularly thick and is seldom more than a few hundred feet thick.

Bedrock is exposed at several places. Nor is the valley an uninterrupted flat surface. At several places, low hills rise above the plain."1/

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The Siuslaw Classification Study Master Unit is but moderately endowed with lakes. Several artificial lakes have been established, primarily for flood control and irrigation. Two lakes inland: Fern Ridge and Triangel Lake; and four lakes next to the Coast: Sutton, Mercer, Clear and Munsel are the only bodies of water of any great importance in the Master Unit.

This area's claim to fame as far as physiographic features are concerned might eventually be the sand dunes along the seashore. The future development of these areas is presently in doubt.

Social Factors

The Siuslaw Classification Study Master Unit is located primarily in the western half of Lane County. Because of its location in respect to the entire County, the effects of any social or general economic factors influenced by this Master Unit are felt by the entire County. For this reason, the presentation of social and general economic conditions are based on County-wide analysis.

The principal cities and their populations of Land County are:

Eugene	50,997
Springfield	19,616
Cottage Grove	4,200
Junction City	1,608
Florence	1,750
Oakridge	2,125
Total Population Lane County	162,890 2/

As noted in the following statistics, the population of Land County is increasing. 3/

	Eugene	Springfield	City Zone	County
Total Population (1960 U.S.Census)	50,977	19,616	120,000	162,890
Total Popul., 1950	35,879	10,807	71,622	125,766
Total Popul., 1943	26,200	N.A.	N.A.	72,300
Total Trading Area, 1960	All of Lane County plus portions of Coos, Douglas, Linn and Benton Counties			
Number of Families, 1960	16,388	5,900		52,000

Several reasons have been advanced for this increase of Lane County population, the most prominent being that the Eugene area is becoming a service area for central and southern Oregon. Because of this, many industries and service organizations are moving from Portland to the
83 Eugene metropolitan area.

The growth of Eugene and Lane County is further reflected in the building permits for new homes over the past 15 years issued by the County and City Building Departments. [4]

	City	County, Excluding incorporated cities
1960	409	731
1959	375	740
1958	261	565
1955	217	757
1950-52	1,171	N.A.
1945-50	2,583	14,055

There is an adequate supply of local labor in the Lane County area. The labor conditions of the County for the year ending September 30, 1960 were as follows:

Occupations by major groups	
Agriculture, fishing, forestry	136
Mining	232
Construction	2,972
Manufacturing	16,153
Food	1,362
Lumber	13,480
Transportation, Communications, Electric, Gas and Sanitary Services	1,660
Interstate Railway	1,360
Wholesale and Retail Trade	8,459
Finance, Insurance, Real Estate	804
Service	3,071
Governments	2,656

Figures do not include city and county employees, most of those employed in agriculture, and other categories not covered by unemployment compensation. OSES estimates that 60 percent of all employees are covered and 40 percent not covered. [3]

In September 1960 there were 13,446 persons employed in the forest industries of the County, drawing an annual payroll of over $72 million. This employment represents 83 percent of covered employment and payroll of all manufacturing industries and 52 percent of

the total covered payroll and employment in the County. In September, 1960 employment in the forest industries was broken down as follows:

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Operation	No. Employed	Percent
Logging Operations	2,368	17
Sawmill	5,114	41
Veneer, Plywood	5,085	40
Miscellaneous	849	20
Total employed lumber industry	13,416	

Annual Lumber Payroll, Lane County for year ending September 30, 1960..................$72,319, 009.00 3/

The one major problem connected with employment in the forest industries is the seasonal fluctuations caused by local weather and national economic conditions. During the spring of 1961, 12% of the total work force was unemployed during the peak of the off-season work.

There is very little migrant worker influx in the Eugene-Lane County area. During the 1960 peak employment month of August, the Oregon State Employment Service made spot checks of all industry and found only .5% of the total employed as being migrant workers.

Economic Factors

The Eugene-Springfield Area because of its growth has developed into the second largest marketing area of Oregon and the fifth largest marketing area in the Pacific Northwest. 5/

1. Agriculture

In Lane County agriculture ranks second as an industry. Here will be found many types of soil on which, with our mild climate and long growing season, it is possible to grow a wide variety of agricultural products. Many are extensively grown by Lane County farmers and processed in Land County. With fine cooperative marketing and excellent transportation facilities, farmers and ranchers with good management have prospered in dairy, beef cattle, sheep, swine and poultry enterprises as well as horticulture and grain crops.

In 1960 there were 3,004 farms in Lane County averaging 122 acres each; total land in farms is 365,310 acres valued with improvements at $105,848,573. Ninety percent

of the farms in Lane County are owned by the operators.
Total Lane County gross farm marketing in 1960 was
$19,472,157. Farm population, according to the 1959
Federal Farm Census, was 13,000. We have in Lane County
85 in the Eugene area an average growing season of 205 days.
Average January temperature, 40.1 degrees; average July
temperature, 65.9 degrees. The average annual rainfall
at Eugene is 37.88 inches; average number of cloudy days,
198; average number of clear and partly cloudy days, 178;
average number of days per year with maximum temperature
of 90 degrees or above, 3; average days per year with
trace of snow, 6; average number of days with minimum
temperature of 32 degrees or below, 48; killing frost
data: earliest in the Autumn, November 4; latest in
the Spring, April 13. 6/

The following Lane County farm data was collected during the 1959 Farm Census taken by the Lane County Agricultural Agent.

Farm Population (1959 Estimate)	13,600
Number Farms, 1959	3,004
Total Farm Land, 1959	365,310 acres
Average Size of Farm, 1959	121.6 acres
Farms with Television, 1957	1,229
Farms with Tractors, 1959	2,438
Farms with Telephones, 1959	2,719
Farms with Electricity, 1959	3,004
Class I (value of products sold, $40,000 or more)	53 farms
Class II (value of products sold, $20,000 to $39,999)	173 farms
Class III (value of products sold, $10,000 to $19,999)	254 farms
Class IV (value of products sold, $5,000 to $9,999)	278 farms
Class V (value of products sold, $2,500 do $4,999)	314 farms
Class VI (value of products sold, $50 to $2,499)	536 farms
Other farms	1,809 farms

Sources: Farm Census, 1959; Lane County Agricultural Agent.

2. Forest Products

The forest products industries of Lane County consist of the following:

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Lumber manufacture dominates among the County's present forest industries with a total of 141 sawmills, 99 stationary mills, 42 portable mills operated during 1955. Collectively these mills produced 1,300 MM b.f. The stationary mills accounted for 98 percent of this volume.

Lane County's veneer and plywood industry in 1955 was comprised of 19 plants. Eight of the plants produced green veneer only and sold their products in that form. There were six layup plants that did no peeling but purchased green veneer. Five complete plywood plants peeled their own green veneer. A total of 626 million square feet of green veneer was produced in 1955.

The County has only one pulp and paper plant but it is large capacity and ranks as a major segment of the local forest industry. The pulp plant uses the sulfate process and has a rated 24-hour capacity of 375 tons. Raw material consists entirely of chip, most of the volume of which is converted from mill residues developed in sawmill and plywood plants. Some chips are made from defective logs.

Six shingle mills operated in the County in 1955. Two of these mills were operated in connection with sawmills making western red cedar lumber. Reported total production during that year was 179,000 squares of shingles.

More than 75 percent of the rail tonnage originating in the County is lumber and timber products. 1,300,000,000 board feet of timber is manufactured in the County annually, and standing merchantable timber is estimated at 97 billion board feet.

Each year a greater percentage of private timber holdings are cut in Lane County without provisions being made to reforest most of these areas. As the private forest reserves dwindle, greater demands will be made upon the public agencies to supply the raw materials needed to keep the lumber and allied industries stable.

This can only be accomplished through the retention of the full public forest reserve and the management of these lands on a sustained-yield multiple use program. The disposal of any part of the public forest reserve will result in a reduced amount of timber available to the forest industry in this area and would directly affect the general economy of Lane County and of Oregon.

87 The feelings of Lane County residents in terms of the forest resources were expressed in an editorial in the Eugene Register-Guard on August 9, 1959. In commenting on the purchase of the Booth Kelly Lumber Company by the Georgia-Pacific Corporation, the editorial stated: "Lane County residents are more than bystanders in the drama of high finances which last month saw Georgia-Pacific Corp. win control of the vast Booth-Kelly holdings in Lane County. And because the area's economy is tied so closely to the lumber industry, Georgia-Pacific's policies in administering the estimated 3½ billion board feet of timber on the Booth-Kelly lands will have important effects on the community's industrial future.

A sound, sustained-yield program would mean a continuing payroll for years to come, plus stable tax returns.

Quick liquidation of the timber holdings would mean a short-term surge in the economy, followed by fewer jobs and a lessened county tax base."

3. Range Livestock

The majority of the livestock operations are not an independent economic unit in themselves and outside supplemental income is required to sustain the operator. These operators are generally in this dual type of operation because of the availability of grazing on or adjacent to their home which affords inexpensive feed to sustain their livestock.

4. Recreation

The Master Unit attracts recreational visitors from out of the area as well as local residents. The period of use is generally in the summer months, but additional use is encountered during winter, fall and spring.

The coastal area of this Master Unit is gaining national recognition from the interest being expressed over the proposed National Sand Dune Park. Not only are the sand dunes of national importance in this area but the scenic values of the Oregon Coast as seen from U. S. Highway 101 are of noted fame. Because of these two factors, recreation in the western part of this Master Unit is of prime importance.

The type of recreational use of the area is very diversified - a few of these are:

Tourists who travel on the main highways in the Master Unit come in contact with the excellent facilities and natural and rugged scenery of Western Oregon.

Hunting and fishing are done by many local and out of area people. The Lower Siuslaw River is well-known for its salmon fishing.

Many other streams and reservoirs of lesser prominence but equal quality exist in this area. A large herd of blacktail deer live in this Master Unit and are harvested each fall in large numbers by Oregon hunters. Because of management problems in places, this herd does considerable damage to reforestation projects.

With two dams in the Master Unit, Fern Ridge and Triangle Lake, a heavy increase in small boating has occurred in Lane County. Besides the reservoirs there are many lakes and rivers that are used by the boating enthusiast. The Lane County Sheriff's Office reports that 3,855 boats were registered in Lane County on June 1, 1961. Because of the availability of good water, interest in water skiing is gaining rapidly.

As the population of the West increases, the demand for recreational outlets becomes heavier yearly. In their book "Plan 62" the Lane County Parks and Recreation

Commission surveyed the present and future needs for recreation facilities in Lane County and summarized by stating

> 89 "In 1957 there were an estimated 1,598,000 recreation visits to developed facilities available to the public in Lane County. This number of visits would require 2,092 picnic-camping units. As only 1,578 are available, there is an indicated shortage of 434 units. Forest Service and State Parks plans indicate about 512 units will be added by 1962. However, usage will probably have increased to 2,556,000 visits in 1962, requiring 3,219 units. Thus, there is an anticipated shortage of 2,090 picnic and camping units at the end of five years." 7/

It is indicated in this report that one of the greatest needs for new development of recreation facilities exists in this Master Unit.

5. Mining

Mining is of no significant importance in this Master Unit.

6. Industry

In regard to industry other than the above-mentioned, as the Eugene area becomes further known as a service area for the Central Willamette Valley Area and Southern Oregon, more service and retail outlets will be established in the Eugene-Lane County Area.

Transportation Systems

Transportation systems in Lane County are

- Intercity Lines
  - Greyhound, Trailways
- Railways
  - Southern Pacific, Oregon Electric R.R., S.P. and S., Great Northern, Northern Pacific
- Airlines
  - United Air Lines, West Coast Air Lines, Cascade Air Lines (Non-schedule)
- Truck lines
  - 17 major truck lines serve the Eugene area
- Highways
  - U. S. 99 (Interstate 5 Freeway
  - U. S. 99 West
  - U. S. 126
  - State 36, 38, 58
  - County Trunk Roads - 6 3/

Energy Systems

Energy systems that service the greater portion of Lane County are:

- Municipal
    - Eugene Water and Electric Board
    - Springfield Municipal Power
- Federal
    - 90 Bonneville Power Administration
    - R.E.A. - Lane Electric
- Private
    - Pacific Power and Light
    - Northwest Natural Gas Co.
    - Lane County Electric Co-op.
    - Blachly-Lane Co., Co-op. Electric Assn.

3/

Water

In describing the water resources of Lane County, the Lane County Planning Commission states:

> "Lane County has been blessed with an above average supply of surface water. Until very recent years this apparent abundance was taken for granted, but it is now being recognized that the future development and prosperity of Lane County is dependent upon the orderly development and utilization of this all-important resource. Surface water now provides and in the future will play a more important role as a basic source for electrical energy, irrigation for agricultural lands, sport fishing, recreation, transportation and urban domestic needs.
>
> "When one natural resource provides or is capable of providing, so many services to mankind, determination of proper utilization becomes a paramount issue. Conflict of uses is inevitable but can be minimized by thoroughly studying the potentials of such a resource and scheduling its use to meet the various needs for optimum development. It is neither desirable, practical, nor necessary to preserve every stream in its natural state, but neither is it desirable nor in the best economic interests of Lane County to destroy the better scenic areas for the sake of an acre foot of water or a kilowatt of power. True values must be determined on thorough analysis based, not on expediency, but rather on long-range requirements scheduled to achieve the economic and social environment to which we, the citizens, aspire.

> "Unlike the Columbia River, the Willamette basin and coastal
> streams flow to capacity during the winter months and decrease
> greatly during the dry summer months. This is due to the
> limited drainage basin within the higher snow retaining alti-
> 91 tudes, and the moderate climate with very few days of subfreezing
> weather. Therefore, one of the basic needs for Lane County is a
> series of dams to reduce winter flood damage and retain water
> to give a more adequate supply during the summer months. This
> program is being energetically pursued by the Corps of Army
> Engineers." 8/

As can be seen by the following list of existing and proposed dams, Lane County has an above average potential in water resources.

RESERVOIR CAPACITY, HYDROELECTRIC POWER AND STEAM PLANT GENERATION OF EXISTING AND PROPOSED DAMS 8/

Reservoir	Water Storage In Acre Feet	Existing Generating Capacity in KW Normal	Min.Hydro.Yr.	Ultimate Elec. Power in KW Norm.	Min.HydroYr
Lookout Point	456,000	120,000	73,800	120,000	73,800
Dexter	27,500	15,000	11,500	15,000	11,500
Cottage Grove	32,900	None	None	None	None
Dorena	77,500	None	None	None	None
Fall Creek	115,000	None	None	None	None
Waldo Lake	226,000	None	None	None	None
Fern Ridge	101,200	None	None	None	None
Cougar	219,000	None	None	25,000	18,600
Hills Creek	356,000	None	None	30,000	22,600
Blue River	85,000	None	None	None	None
Gate Creek	50,000	None	None	None	None
Leaburg	Non-effective				
E.W.E.B. Leaburg Power Plant		14,000	5,350	14,000	5,350
E.W.E.B. Walterville Power Plant		9,000	8,600	9,000	8,600
E.W.E.B. Steam Power Plant		32,000	32,000	32,000	32,000

In the Siuslaw Master Unit, relatively mild temperatures are conducive to long growing seasons. Day-to-night and season-to-season variations are not great. Coldest weather occurs in January or February; warmest in July or August. The average temperature for the Siuslaw Master Unit is 32-36 degrees in January and 65-70 degrees in July. There are about 110-150 days of frost-free growing season. Frost ordinarily is a surface phenomenon, with even base soil barely frozen to a depth greater than an inch or two. In the coldest parts of the Unit, the snow blanket provides insulation against frost. There are heavy winds

occasionally that can cause damage to the forest stand. Cold winter
winds may cause freezing damage to the trees. Humidity is generally
high under the influence of moist marine air brought in by prevailing
westerly winds. Occasional periods of low humidity accompany northerly
92 or easterly winds. In summer and fall they result in high fire danger.
Lightning and glaze storms occasionally occur which can cause damage to
the forest stand.

From weather bureau records as quoted by the Land County Planning Commission, it can be seen that "Rainfall in Lane County shows considerable variation from area to area with an average annual difference, between Canary on the Coast and Eugene in the valley, of some 36 inches. This variation is especially marked during the months of November, December, January, February, and March. Of special interest is the fact that the average annual rainfall of Cottage Grove, our Coast Fork city(elev. 650), exceeds that of Oakridge (elev. 1, 310 feet), by some 4.7 inches. The close relationship between Lane County's mountain ranges and rainfall is shown by the map (See "Exhibit A" Average Monthly Precipitation for Five Weather Stations.) Snow is an event in the valley and seldom lasts more than a few days at the most. In the high mountain areas snow remains much of the year with depths up to 20 feet."

Public Work Projects

The Corps of Engineers has constructed the Fern Ridge Dam on the Long Tom River for flood control and summer irrigation. Additional work by the Corps of Engineers is being done on the Siuslaw inlet to keep the deep water port of Florence open to sea-going ships. To accomplish this, dredging of the channel and repair of the south jetty must be done.

The Bureau of Land Management, U.S. Forest Service, and Lane County are cooperating also in this work and each is working to control the shifting sands by grass, brush and tree plantations.

Labor Unions and Farm Cooperatives

With both industry and agriculture very strong in this area, both labor unions and farm cooperatives are strong. There are over twenty labor locals maintaining offices in Eugene covering such workers as:

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1. Lumber and sawmill
2. Cannery
3. Construction
4. Electrical
5. Plumbing
6. Teamsters
7. Carpenters
8. Communications

Farm cooperatives and organizations remain strong in this area. Cooperatives provide one of the major outlets for farm products.

Major outlets for marketing in Eugene are the Eugene Fruit Growers' Association, the Oregon Egg Producers and the Eugene Farmers' Creamery. The largest cooperative market in Eugene is the Eugene Fruit Growers' Association. In 1960 this Association had a payroll of over two million dollars, and employed from 200 persons during the winter season to over 2,000 in the summer. Their production and packaging of string beans is one of the largest in the country. 6/

Local Planning and Control Groups

The Lane County area is blanketed with local planning and control groups. Outside of the area of the City of Eugene, most of the control and planning is done by the Lane County organizations under a form of agreement with the various municipalities.

As noted below, the Lane County planning setup is a joint affair between county, cities, school and park districts.

The office known as Central Lane County Planning Commission serves as a working agent to the Lane County Planning Commission, City of Eugene Planning Commission, City of Springfield Planning Commission, City of Junction City Planning Commission, School District #4, School District #19, Willamalane Park District and Eugene Water and Electric Board to accomplish collectively for the participating organizations what they cannot afford to do independently.

The Central Lane County Planning Commission has been in operation since November 1, 1945. It was conceived and brought into being through the efforts of the Central Lane County Planning Council, an unofficial citizens committee.

Since that time approximately 89 square miles of Lane County's 4,594 square miles have been completely zoned (23½ miles within Eugene and Springfield). In addition all land within 800 feet of any school or school site in Lane County is restricted to residential use. Zoning not only covers land use but provides for minimum set-backs for highway widening or the creation of new 94 streets. Other accomplishments include adoption of county-wide Building Code and requiring building permits as a prerequisite to building in all areas. 9/ Efforts of the Planning Commission in the field of urban renewal have been stymied by a vote of the people in both Eugene, Florence and to some extent Springfield. See Exhibit "B" showing organizational chart of Central Land County Planning Commission.

In addition to the planning commissions, the cities and the county maintain jointly a Board of Health with its various sections. Some of the activities in this field are:

1. Vital Statistics
2. Communicable Disease
3. Maternal and Child Health
4. School Health
5. Handicapped Persons
6. Environmental Sanitation
7. Vector Control
8. Mental Health
9. Civil Defense
10. Laboratory Services

The City of Eugene maintains a Milk and Food Inspector, a function usually carried out on the state level. 10/

The building departments of the various cities work closely with the Lane County building department which is under the supervision of the County Health Officer. Because of increasng problems of sewage disposal, access, building regulations, etc., the control of these regulatory agencies over new construction has become more pronounced.

Numerous State, County and Federal assistance groups maintain offices within the boundaries of this master unit. The following are the more prominent:

1. Soil Conservation Service
2. General Extension Service
3. Employment Service 95
4. Welfare Service
5. Veterans Administration
6. Forest Service
7. Industrial Accident Commission
8. Vocational Rehabilitation Service
9. Farmers Home Administration
10. Social Security Administration
11. Bureau of Land Management
12. Bonneville Power Administration
13. Weather Bureau
14. Public Housing Administration
15. Labor Department
16. Coast Guard

Many other public agencies operating more in a regulatory nature but providing a form of assistance include:

1. Public Utilities Commission
2. State Game Commission
3. State Highway Commission
4. State Police
5. Army Engineers
6. Military Reserve organizations of all branches
7. Commerce Department
8. Interstate Airways Communications
9. Safety Regulation Bureau
10. Internal Revenue Deputy
11. Post Office Department

It is quite evident from the number of agencies maintaining offices and branch offices within the boundary of this master unit, that it is a center of importance for local planning, control groups and assistance groups. There is no evidence of a decline in the concentration of public offices in this area. This concentration allows the various agencies to cooperate efffctively, to exchange ideas, for personnel to mingle to a maximum and to promote the general effectiveness of all agencies concerned.

Local Public Institutions

The University of Oregon at Eugene is the only state-supported institution of higher learning in the master unit. The Fall enrollment for 1960 at the University was 7,600 students.

State support on a per pupil basis is provided through the various school districts to the following:

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Type	Number	No. Pupils
Elementary	104	31,167
Junior	18	10,659
Senior High	22	10,328
Vocational (High School)	1	550

Effect of Adjoining States

Competition exists between this master unit and adjoining states in markets for the products and manufactured goods produced in the Lane County area. Because of an adequate supply of labor, water and electrical power considerable selling of Land County is being done to attract outside industry to locate here.

Lands

A. Jurisdiction

1. Federal

97 Federal jurisdiction in this Master Unit is dominated by the Siuslaw National Forest (27,000 A.) and the O&C Lands (156,000 A.). A portion of the controversial Dunes National Park, if established, would be in this area.

There is a small amount of Public Domain lands intermingled with the O&C lands. Public Domain amounts to 5,136A. In addition there are several hundred acres of this land on the coast - a portion of the sand dunes.

Approximately 23 tracts of BLM lands containing 1,442 A. have been withdrawn for scenic and recreational purposes. These generally are along streams and major roads.

2. Other Public

The State of Oregon also awns considerable commercial forest acreage in the Coast Range (14,500 A.). This land is managed by the State Board of Forestry staff in Eugene. The state also owns several State Parks, and Lane County maintains several parks and waysides.

3. Private Lands

Private lands are of two principal catagories - timber and agricultural. Agriculture is the second largest industry in the county - there being slightly over 3,000 farms with an acreage of over 365,000 acres in 1959. 11/ The largest industry of the area in acreage, employment and product value is the timber industry. The largest industrial holders in the Master Unit are International Paper Company Weyerhaeuser Company and Georgia-Pacific Corp. Others of importance are U.S. Plywood Corp., Davidson Industries and Hult Lumber Company. International Paper Company, Georgia-Pacific, U.S. Plywood and Weyerhaeuser are owned by stockholders throughout the country. Nearly all of the others are locally owned - principally family companies.

B. BLM land in the Siuslaw Classification Study Master Unit is located generally in the Coast Range. The land is primarily steep, mountainous forest land supporting a heavy stand of Douglas-fir with a mixture of western red cedar and western hemlock. Except for a few areas where ownership has been blocked up, the land is mixed with private land in alternate sections; the familiar O&C checkerboard. On the sea coast 98 are the sand dunes - a portion of which are administered by BLM as Public Domain. In cooperation with the Forest Service, State, County and Siuslaw Soil Conservation Service, a program of dune stabilization is being carried on. There are several other scattered 40 and 80 acre tracts of Public Domain forest land.

C. Use and Demand for BLM lands

1. There is no use or demand for BLM land for agricultural purposes in this Master Unit.

2. Grazing

(a) Significance of BLM lands
There is a minor amount of grazing use. There are no ranch operations that require government land for an economic operation.

(b) Range Condition

The land is managed primarily for timber production; "range" condition is not considered. Important weeds and/or poisonous plants include Canadian thistle and Tansy Ragwort.

(c) Season of Use

The fifteen grazing permits are limited to cattle and an occasional horse. Winter grazing is not usually allowed since damage to forest reproduction and soil is likely to occur at this time.

(d) Conflicts and Problems

In most cases the limited grazing does not conflict with management objectives. However, in some cases grazing trespass has been detrimental to forest regeneration.

3. Forestry

(a) Significance to local economy

BLM land in the Master Unit contributes approximately 101 MM b.f. or 8% of the total annual timber cut in Lane County. Several of the medium and smaller mills depend almost wholly on this timber. 99

(b) Types

The predominant timber type and the only one of economic importance is the Douglas-fir type.

(c) Inventory and Allowable Cut

A comprehensive inventory of the Master Unit was last completed in 1955. At that time 72,000 acres supported mature merchantable timber. A new inventory, based on up to date photography, is being processed at the present time. Based on the 1955 inventory, the annual cut from BLM lands amounts to 79.1 MM. In addition, thinnings, relog and salvage material have been adding about 20 MM annually.

(d) Present Program

The present BLM program is one intensification of land management practices. An intensive reforestation and land rehabilitation program has been carried on the past four years. Also, improved resource development planning has received considerable attention. Attention is being directed to aspects of the management program that heretofore received only passing notice.

(e) Access Situation

Access to BLM land is one of the biggest of management problem. Federal access roads serve a large portion of the area but a large share of the remainder does not have satisfactory access. This is especially true of the more isolated tracts. Progress is slowly being made toward gradual improvement of this situation.

(f) Protection

Protection of these lands is contracted to the state and
100 is provided by the Western Lane Fire Patrol. A small
portion is protected by the Siuslaw National Forest.

4. Minerals

There has never been significant mineral activity on the public lands in the Siuslaw Master Unit. Prior to the passage of P.L. 167, claims were occasionally established and patented on hard rock quarry sites. Several of these claims remain unpatented, but there are no known fraudulent claims. Thirteen active oil and gas leases cover 7,196 acres. As of this date, no active exploration has been undertaken on these.

5. Water

The Bureau of Land Management is concerned with both quantity and quality control of waters within this Master Unit. The entire Siuslaw River and many of its tributaries are contained within this unit. Increasing importance is being placed on factors of our timber harvesting program which have any influence on the waters flowing through the area. Efforts are being made in sale planning to prevent denuding of large contiguous areas, thus helping to maintain a more constant flow of clean water. Timber sales are now being prepared in such a manner that major stream beds are only partially exposed; or where necessary, are excluded from the sale area entirely. This should help both cleanliness and temperature. Contract stipulations now include provisions for clearing of all major streams of debris to assist in water flow and fish passage.

A program of stream clearing has been prepared for a portion of the unit and is ready to be undertaken as funds become available.

6. Recreation and Wildlife

(a) Significance of Bureau of Land Management lands.

To this date, BLM land has not figured significantly in the recreation picture of Western Lane County.

(b) Demand and Use

Demand so far has been limited to hunting and some fishing in the larger streams such as Lake Creek and the Siuslaw. However, with the rapidly increasing population of the area and the greater leisure time of the people, greater recreation pressure is anticipated.

(c) Developments

Currently there is one completed Bureau of Land Management picnic area and three others have been programmed for completion in the near future. Other recreational development has been done by the State, County, private companies and Siuslaw National Forest on lands owned by
101 them.

(d) Short or Long Term Visits

Visits to these areas are generally short term duration - picnicking or weedend camping.

(e) Species of Wildlife

Wildlife is plentiful in this area, but because of the brushy undercover, is not as often seen as would be the case otherwise. Black-tail deer are plentiful. Black bear are occasionally seen and are not uncommon in some areas. Other species include the bandtailed pigeon, ruffed and blue grouse, quail, ring-necked pheasant, mourning dove, migratory waterfowl, Douglas ground squirrel, silver-grey tree squirrel and numerous songbirds.

(f) Coordination Act Proposals

In cooperation with the National Park Service, 31 areas having potential recreation possibilities have been surveyed and are being held pending classification. These areas should be carefully reviewed and areas not needed for recreation kept in multiple use.

(g) Access

Access for recreational purposes has not been a problem yet. The developed area and the programmed areas are served by Federal Access Roads. The timber owning companies generally are very cooperative in allowing access to sportsmen during appropriate seasons.

(h) Conflicts with other Uses

Because of the relatively low recreation pressure, conflicts have not been felt so far. However, as use develops and more areas are withdrawn, conflicts may develop between timber production and recreation.

(i) Problems

At the present time there is no demand for Bureau land for commercial development. There is so little of the land that could be used for this purpose that problems are not anticipated.

General Conclusions

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The O&C and P.D. lands which comprise the National Land Reserve in the study area are highly significant to the County, the State, and to the Nation. The multiple use values of these lands include timber production, watershed protection, recreation and forage production. These values can but be attained and developed by the retention of such lands for multiple use management by the Bureau of Land Management.

The O&C lands which make up the bulk of National Land Reserve in this unit were placed under sustained yield management by the act of August 28, 1937. By Secretarial Order, No. 2285, dated December 11, 1946, the Siuslaw Sustained Yield Master Unit was declared. All the O&C lands were classified as timber production lands in 1948 and these lands now have stable tenure.

The other National Land Reserve lands in the study area have similar characteristics to the O&C lands and are intermingled with them. Thus, they should be classified for retention and multiple use management by BLM. In a few instances, private exchange could improve the overall management.

As of July 1, 1961, the sustained yield timber production capacity of the National Land Reserve lands in the Western Oregon units will be calculated on the combined total of all the BLM lands. For the Siuslaw Area the allowable annual cut is approximately 68.5 million board feet valued at about $2,720,000.00 per year.

Since the Bureau of Land Management lands are in the drainages that flow into the dams and major tributaries of Western Oregon, the proper management of these watersheds is vital.

Recreational use of the National Land Reserve is increasing yearly and wise development by the Bureau of Land Management will make these areas fully available to the public.

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ROSEBURG

DOUGLAS

MASTER UNIT CLASSIFICATION
Roseburg Management Area
Douglas Master Unit

Initial Analysis

I. LOCATION

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A. External Physiographic Boundaries

The Douglas Master Unit is located in Southwest Oregon. It is bounded on the East by the summit of the Cascade Mountains; on the West generally by the summit of the Coast Range Mountains; on the North by the Smith River-Siuslaw River divide, the Calapooya divide between the Umpqua River system and the Willamette River system, and an East-West line between Townships 23 South and 24 South drawn to the summit of the Cascade Mountains. The South boundary follows the ridges which mark the northern delineation of the West Fork of Cow Creek drainage and the northern delineation of the Upper Cow Creek drainage, and thence east to the summit of the Cascade Mountains on a line drawn between Townships 31 South and 32 South of the Willamette Meridian.

Generally the Master Unit includes the inland Umpqua River Basin with the exceptions of the aforementioned West Fork of Cow Creek and Upper Cow Creek drainages.

B. Counties Included

The definite geographic boundaries are within Douglas County. The township line boundaries drawn to the summit of the Cascade Mountains include parts of Douglas, Lane, Jackson, and Klamath Counties.

II. INTERNAL PHYSIOGRAPHIC FEATURES

A. Rivers

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Although the Douglas Master Unit boundaries include portions of the Willamette and Rogue River systems, this analysis covers only the inland Umpqua River system. The Willamette and Rogue Rivers are covered under adjoining Master Unit classifications.

The Umpqua River is the largest river in average streamflow between the Columbia River and the Sacramento River at San Francisco Bay.

The Umpqua in the inland reaches is divided into two major streams--the South Umpqua River and the North Umpqua River. These two rivers converge a few miles Northwest of Roseburg.

In the low flow period in the Fall, approximately 80% of the flow at Elkton, a town on the Western boundary of the Master Unit, can be measured on the North Umpqua River at Copeland Creek--a point well up the North Umpqua drainage. This illustrates the extremely low summer flow of the South Umpqua River. The average flow for the driest month of the year is 700 c.f.s. at Winchester on the North Umpqua, but only 44 c.f.s. at Brockway on the South Umpqua River.

In the winter months, the flow of the South Umpqua is usually greater than that of the North Umpqua River. Two factors contribute to this winter reversal. First, the South Umpqua drainage is larger in area; and, second, the South Umpqua drainage is a very inefficient watershed for water retention capacity.

B. Mountains

The mountain ranges surrounding the inland Umpqua River Basin have an isolating effect.

The barriers to the North and to the South are not as effective as the Cascade Mountains to the East or the Coast Range to the West, but climate-wise they are effective enough to give Roseburg the lowest average wind velocity of any city in the United States.

The isolation-effect afforded by the mountain ranges influences many things other than climate; for example, transportation, communications, and other human endeavors and also, to a limited extent, the attitudes of the human inhabitants themselves.

C. Lakes

Lakes are conspicuous by their almost absence in the Douglas Master Unit.

There are no lakes, natural or artificial, on or near the lands under the jurisdiction of the Bureau of Land Management.

[illegible]

Rivers

Although [illegible] portion of the [illegible] covers only [illegible] Umpqua River [illegible] there are [illegible].

The Umpqua River is the largest [illegible] between [illegible].

The [illegible] North Umpqua River and the South Umpqua [illegible]. The two rivers [illegible].

[illegible] North Umpqua [illegible] South Umpqua River.

In the summer months, the flow of the North Umpqua is usually greater than that of the South Umpqua River. [illegible]

Topography

The mountain ranges surrounding the inland Umpqua River Basin have an [illegible] effect.

The [illegible] Coast Range [illegible] Cascade Mountains [illegible].

The [illegible] afforded by the mountain ranges influences many things other than climate; for example, transportation, communication, [illegible] characteristics of the [illegible].

Lakes

Lakes are conspicuous by their almost absence in the Umpqua Master Unit.

There are no lakes, natural or artificial, [illegible] under the jurisdiction of the Bureau of Land Management.

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In the Forest Service area there are only a few lakes and much less in number than generally found in the Cascade Mountain Range area. The notable exception is Diamond Lake near the summit.

Under Park Service jurisdiction is Crater Lake, a unique lake in the crater of ancient Mount Mazama. This Lake is located at the summit and on the East boundary of the Douglas Master Unit.

D. Other Land Forms

There are no land forms other than those covered above.

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III. SOCIAL FACTORS

A. Population

1. Urban

The majority of the population of the Douglas Master Unit is rural. The urban population resides in cities and small towns located along the route of U.S. highway No. 99 or the mainline of the Southern Pacific Railway. The highway and railway run north and south and are closely parallel most of the way through the Master Unit.

2. Distribution

In the 1960 census of Douglas County, 27,178 was classed as city population and 40,525 as rural.

3. Major Towns and Cities

The 1960 census of the 10 largest towns and cities in the Umpqua Master Unit was as follows:

Roseburg	11,283
Myrtle Creek	2,618
Sutherlin	2,429
Winston	2,375
Canyonville	1,088
Drain	1,052
Riddle	986
Oakland	824
Yoncalla	691
Elkton	146
Total	23,492

4. Population Changes Last 10 Years

In 1950, the population of the 10 largest towns and cities (not including Winston which was very small and unincorporated in 1950) was 16,702.

In 1960 the population of these towns (including Winston 2,375) was 23,492.

The 1950 census for Douglas County (including Reedsport 2,288 which is outside the Douglas Master Unit) was 46,159. One estimate for Douglas County for 1960 placed the population at 83,553. It is believed that this estimate was too high.

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The Douglas County Planning Commission has estimated a 4.18% annual increase in population in recent years. The Commission estimates a total County population of approximately 125,810 in year 1970.

There have been no shifts, as such between urban and rural population in the last 10 years. Both populations have been increasing.

5. Ethnic and Social Groups

The population is practically a 100 per cent white race population. Only a few persons of other races reside in the Master Unit.

The social groups can be roughly divided into three categories. First, the families of long-time residents including the descendants of the Pioneers; second, the trades, service, and professional people who came to the area since the advent of the logging boom in the war years; and third, the people from Oklahoma and Arkansas who migrated to the area because of the employment opportunities afforded by mill and woods work.

B. Available Labor

1. Migrant Workers

There are no migrant workers employed in the Master Unit. Agricultural crops are diversified with no large production of any single crop. The largest livestock pursuits are sheep and cattle grazing on resident ranches.

2. Unemployment

a. Seasonal unemployment is sometimes severe in the Master Unit. The economy of the Master Unit is based largely on mill and woods work and winter layoffs in the woods traditionally affect the unemployment situation.

b. Fluctuations in the lumber and plywood markets directly and to a large extent affect the employment and unemployment situations.

IV. GENERAL ECONOMIC FACTORS

A. Basic Income-Producing Occupations

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1. Agriculture

a. Types

Agricultural cash crops are derived from truck gardening and from orchards located almost exclusively in the narrow flood plain of the Umpqua River and a few of its tributaries.

The diversity of the crops shipped out of the Master Unit is a reflection of the favorable climate

Melons, tomatoes, cabbage, broccoli, snap beans, pears, apples, peaches, walnuts, and filberts are shipped out of the area.

b. Climate

1. Temperature

(a) Mean Summer Temperature

The recorded mean temperature at Roseburg (period years 1900-1957) was 67.8 degrees for July and 67.5 degrees for August.

The mean maximum was 82.3 for July and 82.1 for August.

The mean minimum was 53.2 for July and 52.9 degrees for August.

September mean temperature averaged 54.5; mean max. 75.9; and mean min. 48.6 degrees. June means are almost identical to September temperature means.

(b) Growing Season

The growing season at Roseburg on the average lasts from April 5 to November 13 or approximately 222 days.

2. Precipitation

The average annual rainfall at Roseburg is 32.58 inches. July and August are dry with a recorded mean of 0.28 inches and 0.33 inches respectively. In many years dry spells lasting over a month have occurred.

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c. Soils

1. Quality

The soils encountered in the Umpqua Basin are very deverse. They are developed under a humid to subhumid climate with mild wet winters and warm dry summers. Average annual precipitation ranges from nearly 80 inches in the upper Smith River area to less than 30 inches at Riddle. Soil materials originated through the weathering of igneous, sedimentary, and metamorphic rocks.

The soils are free of carbonates and other soluable salts and are faintly to definitely acid in reaction.

The soils are separated into three main groups according to the mode of formation of parent materials--recent alluvial, old alluvial, and residual. Each group is described briefly.

Recent Alluvial.--The recent alluvial soils are generally the most productive of the basin. They are located on low terraces bordering the streams. These soils are characterized by little or no profile development. The principal soil series are listed below in order of their agricultural importance.

Cove series soils, known locally as "black mud," are nearly black colored with heavy clay or clay adobe surface soils. Subsoils are similar in texture and color with varying degrees of mottling below 3 feet. Large cracks appear when the soils are dry. They are hard to cultivate, but are very fertile and capable of good yields when properly managed. They take water quite readily. These soils are best suited for pasture, hay and pears.

The Umpqua series are among the most productive soils of the basin. They are rich brown colored, friable, deep, well drained, fertile, and suited to a wide variety of crops.

The Roseburg series soils are similar to the Umpqua soils but lighter textured in both surface and subsoils.

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The Camas series are good quality soils, but slightly less productive than the Umpqua or Roseburg series because of gravel substrata at fairly shallow depths.

The Newberg series are similar to the Roseburg series in physical characteristics and agronomic qualities.

The Wapato series are of inferior quality, poorly drained, dark colored soils located mostly in low-lying positions along minor streams. They are best suited for pasture and hay crops.

Old Alluvial.--Old alluvial soils are the most extensive agriculturally important group in the basin. They are located intermediate between the recent alluvial soils on low terraces and the residual footslope soils. These soils are characterized by moderately compact subsoils of heavier texture than the surface soils. They are subsequently discussed by soil series designations, listed in order of their importance.

Amity series soils have a dark grayish-brown, medium textured, surface soil underlain by slightly compacted subsoil that impedes free movement of water. They are capable of good yields of a fairly wide variety of crops when properly managed.

The Yoncalla series soils have a light, grayish-brown surface soil underlain by slowly permeable subsoil. Surface drainage is usually satisfactory, but slow internal drainage restricts the crop range.

The Willamette series soils are very productive, brown colored soils of medium texture. They are well drained and suitable for a wide variety of crops.

Dole series soils are fairly productive, with a brown, medium textured surface soil. Upper subsoil is reddish or yellowish and is underlain by cemented material which impedes subsurface drainage. Crop range is slightly restricted.

The Carnes series soils are very good quality. They have medium textured, brown colored soil and subsoil. They are well drained and contain some gravel in their profile. These soils are capable of producing very good yields of all climatically suited crops.

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Drain series soils are fairly good quality. They are characterized by dark, grayish-brown, medium textured surface soil and gray clayey subsoil over a gravelly, highly mottled substratum. These soils occur mostly in Camas Swale. Impeded drainage limits crop range.

The Hedden series are fairly productive soils, characterized by medium texture and reddish-brown color. They occur below Kellogg along Umpqua River. They are strongly acid in reaction but moderately fertile. They respond well to lime and fertilizers.

The Holcomb series soils are fairly good quality and are most common in Lookingglass Valley. They are characterized by light grayish-brown, medium textured surface soils and heavier textured, mottled subsoils overlying an olive brown clay pan. Impeded subdrainage limits the crop range and yield.

Residual.--Residual soils are the least important group agriculturally. Although they are more extensive in Umpqua Basin than either of the other two groups, they occur principally on mountainous or hilly lands. These soils developed in place from materials derived from both igneous and sedimentary rocks. They are comparatively shallow over rock although the depth varies considerably over short distances. They consist primarily of the following three soil series, listed in order of their importance.

The Climax series soils, known locally as "black mud" are similar in color and surface texture to the Cove series. They are generally located on footslopes or rolling land. Surface soils are nearly black clay or clay adobe. Large cracks appear in the surface when dry. Subsoil is similar in color and texture to a depth of 2 or 3 feet. Lower subsoil changes to a gray, mottled, slowly permeable clay. These soils are of fair quality, best suited for pasture and hay crops.

Sutherlin series soils are of fair quality characterized by light, grayish-brown surface soil of medium texture and a heavier textured yellowish-brown subsoil. Lower subsoil is a compact olive colored material overlying shale. These soils are best suited for pasture and hay crops under irrigation.

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The Laughlin series soils are fairly productive, characteristically with pale brown, medium textured surface soils and yellowish-brown permeable subsoil. They are capable of producing good yields of most crops climatically suited to the area.

2. Erosion Potential

A few of the forest soils are highly susceptible to water erosion. Wind erosion is not a problem in the Umpqua Basin.

Limited deposits of decomposed granite are encountered in the southern half of the Master Unit. This soil type is extremely erodible when wet.

The South Umpqua River usually carries an extremely high silt content in the winter months. It has been determined that most of the silt originated from agricultural lands in the lower watershed and not from forest lands.

The erosion potential on agricultural lands probably will not increase.

A factor here is the extremely fast rate at which grasses and herbaceous plants take over and clothe bare ground. An over-winter cover usually develops.

2. Forest Products

a. Number of Mills--Past and Present

In the immediate past-war period of 1945-48 there were about 200 mills in Douglas County. Today, in 1961, there are 80 mills according to the Douglas County Assessor's Office

b. Mill Capacity vs. Growing Capacity

The installed mill capacity in the Douglas Master Unit is at least twice the growing capacity.

During a five year period, 1949 to 1953 inclusive, log production in Douglas County was approximately 6½ billion board feet. The estimated growth for that period was 3 billion board feet.

Douglas County includes an area outside the Douglas Master Unit from Elkton west to the Pacific Ocean and also the West Fork of Cow Creek and Upper Cow Creek area, but it is believed that the mill capacity vs. growing capacity ratio is approximately the same for the Master Unit.

c. Private Cutting Policy

The private cutting policy in the Douglas Master Unit has been to meet the market demand for lumber and plywood regardless of growing capacity or sustained yield potential. This amounts to at least a cut-out policy on private lands except for the operators fortunate enough to be able to sustain their mills partially or entirely on government timber stumpage purchases.

The mills not successful in bidding on government stumpage have, and will, cut their own timber to the point of complete liquidation.

d. Availability of Private Stumpage

(1) Small Holdings--Less Than 640 Acres

There are approximately 1,000 individual owners of small timber holdings in the Master Unit.

The merchantable volume on the small holdings is relatively insignificant when related to the annual requirements of the industry. For example, over a billion board feet of timber per year has been cut in recent years in the Master Unit from all ownerships. Small holdings total much less than a billion board feet.

(2) Large Holdings

The largest single owner in Douglas County, with almost 50 percent of the timber land acres, is the Weyerhaeuser Co. Weyerhaeuser is also the largest owner in the Douglas Master Unit.

The Weyerhaeuser Co. owns about 500,000 acres of timber land containing 5,487,578,000 board feet of timber in Douglas County.

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Three other companies, United States Plywood, Roseburg Lumber, and International Paper (largely outside the Master Unit) control about 30% of all Douglas County privately owned timberland. Thus, four companies (3 in the Master Unit) own or control nearly 80% of all the private timber lands in the county. This leaves just 20% for the numerous small companies and small individual owners.

e. Extent of Manufacture

In 1957 approximately 669,000,000 bd. ft. of lumber was manufactured in the Master Unit. In addition, approximately 500,000,000 sq. ft. of veneer and plywood (3/8 inch thick basis) was manufactured.

Log export since the war years has always been in considerable volume. All of Weyerhaeuser Co.'s logs from their Calapooya tree farm in the Master Unit are transported out of the Master Unit for conversion.

The majority of the lumber shipped from the Master Unit is shipped in a rough, green condition. In general, only the larger mills have kiln drying and planing facilities.

Secondary manufacture of wood products is very minor. There are no sash and door, moulding, or flooring manufacturing plants. There is one shingle mill, one pole yard, and one handle factory in or near Roseburg.

Pulping chips are manufactured in large volume from sound wood waste at the sawmills and shipped to pulp plants out of the Master Unit. There is no pulp plant in the Master Unit.

3. Range Livestock

a. Types

The cattle and sheep operations in the Master Unit are not similar to the range operations in the arid regions east of the Cascade Mountains. First, there is very little natural range in the Master Unit. Most of the grass ranges resulted from clearing the lands of their coniferous tree cover. In addition, a large number of acres of unimproved cutover and partially cutover forest lands are utilized for grazing of cattle and sheep.

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It is estimated that about 453,000 acres are utilized to some extent for grazing land in the county. As indicated previously, parts of Douglas County are outside the Douglas Master Unit boundaries.

b. Integration with Agriculture

The cattle operations are generally not integrated with agriculture except that most ranches produce some hay for winter feeding.

The sheep operations are closely integrated with agriculture because of the pastoral nature of the operations in the winter months when no natural feed is available on the unimproved cutover forest lands. Sheep raising is a very popular farming endeavour in Douglas County and in the Master Unit. It appears that almost everyone living outside the towns and cities with an acre or two raises sheep. Government subsidy and incentive programs provides the stimulus.

As a matter of interest, there are more sheep in Douglas County than in any other county in Oregon.

c. Size of Operations--Economic

Because of favorable livestock prices, all sizes of operations are economic in the Master Unit at the present time. Some ranches have greatly supplemented their income from sale of timber stumpage from their land holdings.

In times of suppressed livestock prices, many of the ranches probably would not be of an economic size. However, in Western Oregon the opportunities for diversification are very great and often other employemnt opportunities, such as logging, are available.

d. Working Ranches

Almost without exception, ranch operations are working ranches in the Master Unit and are not tax dodges of absentee owners.

4. Recreation

a. Origin of Recreationists

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(1) Out of Area

The out of area recreationists converge on two areas in the summer months—the North Umpqua River and Diamond Lake. The attraction at both locations is the fishing.

At Diamond Lake the majority of the persons during the summer are from out of the Master Unit.

On the North Umpqua River there is probably an almost equal division.

(2) Local

The local, or Master Unit people make good use of their recreation assets on a year around basis. This is not true of out of area people who come to the Master Unit only for the summer fishing.

b. Kind, Location and Season

(1) Tourists

A great many tourists travel through the Master Unit heading north or south on Highway No. 99. However, the majority appear to be in a hurry to get to California or Washington. Highway 99 through the Master Unit is not particularly scenic as is, for example, the Coast Highway No. 101.

(2) Scenery

In conjunction with statement above on tourists, it is unfortunate that few tourists realize that only a few miles off Highway 99, particularly up the North Umpqua River, the forest and river scenery is as beautiful as any to be found in the Northwest.

Crater Lake National Park must be placed on a separate category.

It has long been officially and universally recognized as having unique features and scenery of National Park caliber.

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(3) Hunting

There are large numbers of Black-tail deer in the Master Unit. Also close to Roseburg there is an over abundance of White-tail deer which at one time were protected in a State Game refuge. Because of the small size of the local White-tail deer as compared to the Black-tail deer or the Eastern Oregon Mule deer, they are not a popular quarry for the local deer hunters.

Upland game birds such as grouse and quail are plentiful in most years. Chinese pheasants were introduced some years ago, but the valley-bottom farms are generally posted against hunting.

In the western part of the Master Unit, Roosevelt Elk herds afford big-game hunting.

Black bear are occasionally found by deer or elk hunters. Their number has been kept at a low level, however, by ranchers and government hunters.

Cougars are relatively quite abundant in the forests but the chase is too strenuous except for the specialists or bounty hunters.

(4) Fishing

The Umpqua River, and particularly the North Umpqua River, has long been known for sports fishing for salmon, steelhead, cutthroat, and rainbow trout.

The North Umpqua carries a good run of summer steelhead of large size. Summer-run steelhead are found in only three or four rivers of Western Oregon. The North Umpqua also carries a good run of Spring Chinook salmon with some fish in the fourty-pound class.

Both forks of the Umpqua carry good runs of winter steelhead with some fish in the twenty-pound class.

Fall runs of silver salmon and searun cutthroat trout have ebbed to low points in recent years, but hope is held that the runs are cyclic and that the fish will return in their former numbers.

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Diamond Lake was poisoned with rotenone several years ago to get rid of the huge population of introduced roach--a trash fish. After treatment, the lake was stocked with the Kamloops variety of rainbow trout. The operation appears to be a success and Kamloops trout to 8 pounds have been taken this year.

Fishing is also available in the reservoir impoundments of the California-Oregon Power Company in the upper reaches of the North Umpqua River. Boat fishing is legal on the reservoirs and fishing for native or planted rainbow trout and for introduced German brown trout is popular with local fishermen.

(5) Camping

Camping facilities have been relatively scarce in the Master Unit. However, this year, the Bureau of Land Management has constructed and opened two camping and picnicking facilities in the North Umpqua area. One site is on Rock Creek and the other is on Canton Creek.

The Forest Service has maintained three small campgrounds on the North Umpqua. They are the Bogus Creek, Steamboat, and Apple Creek Camps. All three are close to Steamboat.

The State Highway Commission has constructed a campground and picnic facilities at Susan Creek on the North Umpqua River. The State constructed and operates the park under permit from the Bureau of Land Management. The land on which the park is situated is O&C land.

(6) Boating

Boating for boating pleasure alone is almost non-existent because of the lack of lakes and easily reached reservoirs. Most boating is done in conjunction with fishing and a limited amount of local water skiing.

Boat-ownership, however, on the per-person ratio is large. Many boat owners trail their boats to the Coast for salmon fishing, to Diamond Lake for trout fishing, or to reservoir impoundments on the Willamette River system in Lane County for water skiing.

Diamond Lake [illegible] with [illegible] [illegible] [illegible] [illegible] population of introduced [illegible] fish. After treatment, the lake was restocked [illegible] the [illegible] variety of rainbow [illegible] appears to be a success and [illegible] up to 5 pounds have been taken this year.

Fishing is also [illegible] in the reservoir impoundments of the California-Oregon Power Company in the upper reaches of the North Umpqua River. Boat fishing is [illegible] on the [illegible] and fishing [illegible] [illegible] [illegible] [illegible] introduced [illegible] [illegible] is [illegible] local fishermen.

(5) Camping

Camping facilities have been relatively scarce in the [illegible] area. However, this year, the Bureau of Land Management has constructed and opened two camping and picnic area facilities in the North Umpqua area. One site is on Rock Creek and the other is on Canton Creek.

The Forest Service has maintained three small campgrounds on the North Umpqua. They are the Bogus Creek, Steamboat, and Apple Creek Camps. All three are close to Steamboat.

The State Highway Commission has constructed a campground and picnic facilities at Susan Creek on the North Umpqua River. The State constructed and operates the park on property leased from the Bureau of Land Management. The land on which the park is situated is O&C land.

(6) Boating

Boating for sport or pleasure alone is almost non-existent because of the lack of lakes and easily navigated waterways. Most boating is done in conjunction with fishing and a limited amount of lake water skiing.

Boat-ownership, however, on the per-person ratio is large. Many boat owners haul their boats to the coast for salmon fishing, to Diamond Lake for trout fishing, or to the water impoundments on the Willamette River system in Lane County for recreation.

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(7) Winter Sports

The only winter sports, other than winter steelhead fishing, is skiing at the one small facility at Taft Mtn. some fourty miles east of Roseburg on Forest Service land.

When the North Umpqua Highway is completed (completion scheduled for 1963) to Diamond Lake, and if the road is kept open in the winter months, a vast area in the upper Cascade Mtns. will be available for winter sports.

(8) Rockhounds

There is a very active rockhound club in Roseburg named the Umpqua Mineral Society. Good grade agates are found in the Master Unit plus petrified wood and a few semi-precious stones.

c. Demand

(1) Now

The present demand for recreation is high and growing rapidly.

(2) Future

As more persons become acquainted with the recreational assets of the Umpqua Basin the demand for recreation will sky-rocket.

The Umpqua Basin lies waiting, but not prepared, for discovery by the recreationists.

5. Mining

a. Kinds

Mineral occurrences in the Douglas Master Unit consist of nickel near Riddle, and copper, lead, zinc with associated gold in the Green Mountain and Drew Creek areas, hard rock and free gold in the tributary areas of the South Umpqua River, and cinnabar or mercury near Sutherlin and in the Deadman Creek area.

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b. Importance

(1) Past

Mercury was at one time the foremost product of the mines, but the largest producer, the Bonanza mine, has been shut down and dismantled in recent years.

Rich pockets of gold were found in the 1850's and 1860's in the Texas Gulch branch of Coffee Creek, North Fork of Myrtle Creek, Lee Creek, Coarse Gold Creek, and in several other locations in the South Umpqua River system.

(2) Present

The only operating mine of importance in the Master Unit is the Hanna Corp's. nickel mine near Riddle.

This is a multi-million dollar project which was initially financed by the federal government during the Korean conflict. The operating company, which owns the land outright but not the processing and smelter facilities, recently fulfilled their quota of nickel production to the government --some 2,000,000 lbs. of nickel.

The Hanna Corp. has indicated a desire to continue operations with production to be offered on the open market. Settlement of the government's investment in the processing facilities is a problem yet to be settled.

6. Other Industry

There are no industries other than those above.

International Paper Co. secured water rights from the North Umpqua River and comtemplated locating a pulp plant in the Sutherlin Area. However, International Paper is going ahead on a new plant at Gardiner on the Coast. Evidently the Sutherlin site has been ruled out.

There have been no other proposals for new industries in the Douglas Master Unit.

B. Transportation Systems

1. Kinds

a. Roads

U. S. Highway 99--the Pacific Highway--which traverses the county from north to south for access to both Willamette and Rogue Basins, serves as the backbone of the highway transportation system of the area. This highway is being improved and the traffic bottlenecks are being eliminated.

State highways of importance are State Highway 42 which connects Coos Bay and water transportation with the inland area, State Highway 38 which connects Drain with Reedsport on the coast, and State Highway 227 which connects Sutherlin with Elkton. State Highway 225--the South Umpqua Highway--connects Canyonville on U. S. 99 with Trail.

Except for the eastern section of the basin, U. S. and State Highways are well connected with county roads. In addition, they are particularly important in log transportation within the area. Altogether the county has about 1,000 miles of well improved road. Of primary importance to the lumber industry and tourist trade is County Road 4, known as the North Umpqua Road. Plans now accomplished or anticipated will link Diamond Lake with the basin through some of the most beautiful scenery in the State.

b. Railroads

Freight railroad service is good. The Southern Pacific Railroad crosses the county from north to south and provides access to transcontinental lines. Roseburg is a scheduled stop for West Coast Airlines. Greyhound and Trailways buslines pass through the area from north to south. Because much of the area is on a direct route between Washington and California, a great deal of freight is transported by highway motor freight companies.

c. Airline

Roseburg is served by one airline--West Coast Airlines which affords scheduled passenger service in the Northwest area. West Coast is a feeder system connecting with the major airlines in the principal cities in the Northwest.

d. Water

There is no water transportation system in the Master Unit.

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2. Proposed Roads

There are no new major roads proposed. Existing main highways are being improved.

C. Energy Systems

1. Electric

Power is distributed by publicly and privately owned systems. Roseburg, Glide, Oakland, Sutherlin, and Tiller are served by the California-Oregon Power Company. Present installed capacity by that company according to Federal Power Commission data is 124,000 kilowatts. Rural areas are served from the facilities of the Douglas Electric Cooperative.

Estimated future power requirements, based on California-Oregon Power Company system estimates, will increase at an average rate of about 33,000 kilowatts per year for the next four years. In view of the rapidly expanding requirements of the area and the fact that the basin is interconnected with Bonneville Power Administration system and the California-Oregon Power Company system, it is believed that the output of any hydroelectric developments in the basin would find a ready market.

2. Gas Transmission Lines

There are no gas transmission lines serving the Douglas Master Unit. The nearest natural gas transmission line is under construction from the Alberta gas fields and will terminate at Eugene which is some 70 miles to the north.

3. Other

There are no other energy systems in the Master Unit.

D. Water

1. Surface

The bulk of the streamflow in Umpqua Basin is derived from precipitation falling in the form of rain. Only at the higher elevations in the Cascades does any significant amount of snow remain on the ground into the summer months to provide late season streamflow. Approximately 20 percent of North Umpqua River watershed lies above 5,000 feet in contrast to only about 3 percent of South Umpqua River

2. Proposed Roads

There are no new major roads proposed. Existing main highways are being improved.

C. Energy Systems

1. Electric

Power is distributed by publicly and privately owned systems. Roseburg, Myrtle Creek, Canyonville, Sutherlin, and Riddle are served by the California-Oregon Power Company. Present installed capacity of this power system, according to Federal Power Commission reports is 185,000 kilowatts. Rural areas are served also by facilities of the Douglas Electric Cooperative.

Estimated future power requirements, based on California-Oregon Power Company market studies, will increase at an average rate of about 30,000 kilowatts per year for the next four years. In view of the rapidly expanding requirements of the area and the fact that the basin is interconnected with Bonneville Power Administration system and the California-Oregon Power Company system, it is believed that the growth of any anticipated developments can be adequately met.

2. Gas Transmission Lines

There are no gas transmission lines serving the Douglas watershed. The nearest natural gas transmission line is under construction from the Pacific Northwest pipeline and will terminate at Eugene which is about 70 miles to the north.

3. Other

There are no other energy systems in the Master Unit.

D. Water

1. Surface

The bulk of the streamflow in Umpqua Basin is derived from precipitation falling in the form of rain. Only at the higher elevations in the Cascades does any significant amount of snow remain on the ground into the summer months to provide late season streamflow. Approximately 10 percent of North Umpqua River watershed lies above 5,000 feet in elevation and only about 5 percent of South Umpqua River

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watershed. Minimum summer precipitation and highly fluctuating streamflow make storage development the only practicable method of providing an adequate water supply to lands inadequately irrigated and to new lands proposed for irrigation. Factors of water supply to be considered in effecting this development are water resources, water rights, water requirements, and water utilization.

2. Ground

Ground water in the basin has its main source in winter precipitation and subsurface flow of water from the mountainous areas surrounding the valleys. The water table is near the surface in early spring and recedes gradually during the summer.

3. Degree Used

a. Power

North Umpqua River, with a large volume of flow well distributed throughout the year, is well adapted to run-of-the-river power installations. However, California-Oregon Power Company has already constructed seven plants with a total installed capacity of 124,000 kilowatts according to Federal Power Commission data. Any further utilization of power on this branch will fit in with the existing COPCO development and could be developed by that company.

There are no power installations on the South Umpqua River although there is a potential power producing site near Tiller which is under investigation by the Bureau of Reclamation for storage water for irrigation and under investigation by the Corps of Engineers for flood control purposes.

b. Irrigation

Ground water use has been limited to shallow wells for farmstead use over most of the Umpqua Basin. A few wells have been used for irrigation in the Winston-Dillard area and in the Melrose-Garden Valley areas near Roseburg.

c. Other

There is no industrial use of water except pumping to fill log ponds at sawmills. Launderies, restaurants, service stations, etc., are supplied water from municipal

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drinking water systems. In the city of Roseburg, the water is supplied by a private company--the Oregon Water Corp. which takes its water from the North Umpqua River at Winchester some 5 miles north of Roseburg.

4. Precipitation

As mentioned previously, the bulk of the streamflow in the Umpqua Basin is derived from precipitation falling in the form of rain. The annual rainfall varies from less than 30" at Tiller to over 80" in the upper Smith River area.

E. Public Works Projects

1. Bureau of Reclamation

There are no existing Bureau of Reclamation Projects in the Douglas Master Unit, but the Bureau is actively engaged in making studies for water resource development in the Umpqua Basin.

The Bureau completed a reconnaissance land classification survey in 1955. The survey revealed that there are about 119,840 acres of irrigable land in the Basin of which some 13,900 acres are presently irrigated.

The Bureau released a special evaluation report in June of 1956 in which a tentative plan of development was proposed. The report listed five potential dam and reservoir sites on the Umpqua River System. They are the Tiller Dismal Creek site on Cow Creek, Olalla, Hinckel on Calapooya Creek, and the Elk Creek site. Alternative plans and alternative dam sites were also listed.

The Bureau has proposed that the Olalla project be completed first and recently the land owners in the area to be served with irrigation water have agreed to the proposed water rate plan for their area.

2. Corps of Engineers

The Corps of Engineers is making flood control studies and tying in their work with the studies of the Bureau of Reclamation.

There are no Corps of Engineer projects in existence in the Master Unit.

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3. Private Power

California-Owner Power Company, which recently merged with Pacific Power Co. has constructed seven power plants on the North Umpqua River. The principal large reservoirs are at Toketee Falls and Lemola Falls.

4. Military Installations

There are no military installations or reservations in the Douglas Master Unit

F. Labor Unions and Farm Cooperatives

Labor in the sawmills and plywood plants is almost completely unionized under the AFL-CIO Unions. These unions have a great deal of influence on the local economy. Strikes, etc. have in the past caused a relative paralysis in local business activety and economy.

Other trades are generally unionized, but not to the extent of the woods and mills.

There is no Farm Cooperative, as such, in the Master Unit. Marketing of crops is handled on an individual or individual contract basis.

G. Local Planning and Control Groups

Douglas has a Planning Commission which advises local communities. However, the teeth of the Planning Commission were pulled several years ago when by ballot vote the citizens of the county revoked the County Zoning ordinance.

H. Federal and State Assistance Groups

Federal and State Assistance groups as entities in the development planning field have not been active in the Master Unit. Each agency appears to be steering its own course in the matters under its jurisdiction.

I. Local Public Institutions

1. Colleges

There are no colleges, junior colleges or universities in the Master Unit. The nearest institution is the University of Oregon at Eugene.

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2. Prisons, State Hospitals, etc.

There are no state facilities in the Master Unit.

The federal government maintains a large Veterans Administration Mental hospital in Roseburg. The annual payroll of the hospital is over $2,000,000 and is an important factor in the economy of Roseburg.

J. Effect of Adjoining States

Because the Douglas Master Unit does not border adjoining States there is very little effect on the Master Unit.

V. The Lands

A. Jurisdiction

1. Federal ✓

a. BLM

In the Douglas Master Unit, the BLM has under its jurisdiction 391,738 acres of Revested O&C Railroad lands; 13,957 acres of Coos Bay Wagon Road lands, and 18,307 acres of public domain lands. Together, the various lands total 423,972 acres and are administered by the Roseburg District office.

b. National Forests

The Douglas National Forest is located within the Master Unit except for their Bohemia Ranger District which is located in the drainage of the Willamette River.

Parts of the Willamette and Rogue River National Forests are also located within the boundaries of the Douglas Master Unit.

c. Indian Reservations

There are no Indian reservations in the Master Unit.

d. Fish and Wildlife

There are no fish and wildlife reservations or withdrawals in the Master Unit.

e. L. U.

There are no L.U. lands in the Master Unit.

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f. National Parks

Crater Lake National Park is located in the Master Unit at the summit of the Cascade Mountains. The Park is surrounded by National Forest lands.

g. Withdrawals

A small island in the Umpqua River near Tyee has been withdrawn for scientific purposes and preservation of the Oregon Myrtlewood trees which cover the island. The island is part O&C land and part public domain land.

A quarter-section has also been withdrawn at Susan Creek on the North Umpqua River for small tract summer home site.

The Federal Power Commission has numerous power site reservations on the Umpqua River system. Most of the reservations were listed in the Land Office records in the period from 1910 to 1925.

h. Other Federal

There are no lands under federal jurisdiction other than those listed above.

2. Other Public

a. State

The State of Orégon owns only a few small scattered tracts of timberland in the Master Unit.

b. County

During the depression, the County acquired a very large acreage of forest land through tax delinquency but has since sold all except for a few small scattered tracts.

3. Private

Most of the private lands outside of cities and farms are timber lands owned by lumber companies.

Weyerhaeuser Company owns an area of 81 sections in almost a solid block in their Calapooya Tree Farm. Weyerhaeuser is a stock corporation.

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The second largest owner is Ken Ford, a resident of Roseburg, and sole owner of the Roseburg Lumber Co. Most of Ford's holdings were acquired from Douglas County through contract purchase of tax delinquent land. Roseburg Lumber Co.'s holdings are generally intermingled with O&C lands in a checkerboard pattern.

B. BLM Lands

The BLM lands are almost all forest lands. They include O&C, CBWR, and PD lands.

The BLM lands are generally distributed in a checkerboard pattern because it was in this pattern that the O&C and CBWR lands were first granted to the railway company and to the wagon road company. The initial grant to the railroad was every odd-numbered section 20 miles on each side of the railroad from California to the Columbia River.

Public Law No. 426 of 1954 directed the BLM and the Forest Service to exchange lands where National Forest and O&C lands were intermingled. Acquisition of some Forest Service lands created solid blocks of O&C lands in the Deadman Creek, Myrtle Creek, Wolf Creek, and Canton Creek areas.

The Act made no provision for exchanging Public Domain lands and the Roseburg District still administers two small PD tracts near Tiller which are outside the District boundaries.

C. Use and Demand for BLM Land

1. Agriculture

Because there is very little, if any, agricultural land under BLM jurisdiction, there is no demand.

2. Grazing

a. Livestock

Both cattle and sheep graze on some of the cutover BLM forest lands.

b. Significance

Generally, BLM lands are not needed for rounded ranch operations. BLM grazing generally means only expanded operations for the ranchers.

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Usually, only a limited investment in private pasture improvement would more than offset the benefits of grazing on BLM lands.

c. Range Condition and Potential

As stated previously, grazing on BLM lands is almost exclusively on recently cutover forest lands. Harmful weeds have not, as yet been introduced and poisonous plants are rare in the Master Unit.

d. Season of Use

Because this area is not a true range area, as for example, the areas east of the Cascade Mountains--the season of use is not as critical as in those areas. Cutover forest lands, if of favorable site and properly managed, are generally restocked with a coniferous tree cover in a few years. Even on the poor sites the natural progression from grass and weeds to brush and hardwood trees affords grazing possibilities for only a few years.

e. Number of Months

Grazing is generally carried on during the Spring and Summer months, then the stock is returned to the home ranch for winter feeding. Feed is almost totally lacking on the cutover forest lands in the winter months.

f. Number of Permits.

There were 26 grazing leases in force in fiscal year 1961 in the Roseburg district. A total of 4,312 acres was under permit.

g. Conflicts

The authorized grazing use does not conflict with other uses.

h. Problems

Un-authorized grazing on BLM lands sometimes creates a problem in reforestation of cutover forest lands because of browsing of planted trees by domestic livestock. The intermingled character of the BLM lands makes fencing impractical--especially in timbered lands where windfalls along property lines are common.

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3. Forestry

a. Economic Significance

Timber harvesting and processing constitutes 75% of the local economy.

b. Location

Approximately 88% of Douglas County is forest land. The forest lands extend from the summit of the Cascade Mountains to the Pacific Ocean except for 11% of the area which is in the valley bottoms in farms and pastures.

The sawmills and plywood plants are generally located along highway No. 99 and the parallel route of the Southern Pacific railway.

c. Types

The major forest type is Douglas-fir. Sugar pine and Ponderosa pine usually appear as scattered individuals or groups of trees rather than as large homogenous types.

In the higher elevations on Forest Service lands, Douglas-fir is replaced by Western hemlock and true firs, lodgepole pine, and mountain hemlock depending on site and elevation.

d. Inventory and Allowable Cut

The BLM has reinventoried its forest lands and is now engaged in establishing a system of permanent sample plots and recording data on the plots. The plot system is integrated with the Forest Service permanent sample plot system throughout Western Oregon.

Data from the new plots is utilized in computations of new allowable cut.

The present allowable annual cut from O&C and CBWR in the Roseburg district is 156.4 million bd. ft. The allowable cut on PD lands is 7.1 million bd. ft. The PD allowable cut is the difference between O&C and CBWR alone and a combination which includes PD.

The Forest Service is engaged in an inventory program similar to that of the BLM in that the same forest type classification system is used and permanent sample plots are established. Type maps of the forest stands are generally not as detailed as those of the BLM.

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The present annual allowable cut capacity of all forest lands in the County has been estimated. The estimate for BLM lands and private lands in the Master Unit would be less than the following estimates for the County and larger for the Forest Service.

BLM	220 million bd. ft.
Private	220 to 250 million bd. ft.
National Forests	264 million bd. ft.
Total	704 to 734 million bd. ft.

e. Present Program

The present program of the BLM in the Roseburg office is to offer the full annual allowable cut of timber from O&C and Public Domain lands plus a volume of timber non-chargeable to the inventory on which allowable cuts are based to bring the total annual offering to 181 million bd. ft.

Reforestation work is carried on annually with a goal of reforesting all unsatisfactorily stocked forest acres except recently cut acres by the end of fiscal year 1965.

Potential recreation sites have been identified and listed.

In fiscal year 1961 two camp sites were constructed on the District and a schedule of additional construction through fiscal year 1963 has been formulated.

f. Access Situation

The access situation is much improved from a few years ago. The acquisition of the Rock Creek road through BLM purchase has made operations much easier in that area. Completion of the first four miles of the Canton Creek Access Road made timber sale offerings possible in that drainage.

Additional federal access road projects under construction or authorized for construction will solve access problems over much of the BLM area.

g. Woodlands

The forest types on BLM lands in the Douglas Master Unit are forest types and not woodland types. Even where hardwood species now predominate as scrub types the general natural trend is conversion to coniferous forests.

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h. Conflicts with Other Uses

Forestry does not conflict with other uses. The BLM lands are almost entirely forest lands in character and unsuited for agriculture or for grazing on a long time basis.

Because of the number of potential recreation areas on BLM lands and because they have been preserved under multiple-use principals, there has been no conflict with recreation.

i. Protection

Protection of BLM lands from fire in recent years has been good. The fire protection contracting agency--the State of Oregon--and local fire protection associations have been diligent and cooperative.

The Roseburg District has not experienced insect epidemics in recent years and prompt salvage of wind-thrown trees is a measure practiced to keep the insect population at endemic levels.

j. Problems

Securing acceptable access rights across some private owners in a few areas constitutes a problem. These cases cannot be solved overnight and lengthy and involved negotiations are necessary before equitable solutions and agreements are reached. Occasionally, condemnation under the federal government's right of eminent domain is required.

Finding a method of obtaining satisfactory restocking of unfavorable southerly slopes is a problem. Various methods such as application of paper mulch have been tried and the results of the trials will be evident at the end of the present growing season.

4. Minerals

a. Kinds and Activity

This topic has been covered under item 5. Minerals of IV - General Economic Factors.

b. The only mineral activity of economic significance is the nickel operation of the Hanna Corp. at Riddle. That operation is very important to the Riddle area as several hundred persons are employed on the operation.

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c. P.L. 167 Progress

Notifications for two townships have been published in local newspapers. Preliminary field examinations for Township 28 South, Range 2 West through 9 West have been completed.

d. Fraudulent Claims for Recreation

To date, the Roseburg District has not been plagued with fraudulent claims for recreation as have other districts.

e. Conflicts with Other Uses

Because mining activity has been at a low level for a number of years, there has been very little conflict with other uses.

Public Law No. 167 of 1955, which provides for multiple use of the surface of claims located after enactment of the Act, has been helpful in managing the timber resources or BLM lands. Likewise, provisions of the Act which provide for determination of or waiver of surface rights on older claims have been helpful in managing surface resources.

f. Problems

There are no major problems concerning mining. Occasionally minor problems arise, but the District has been successful in solving those problems on a case by case basis.

5. Water

In foregoing sections of this analysis it was pointed out that the summer flow of the Umpqua River largely originates on lands under Forest Service jurisdiction. However, the portion of the summer flow which originates from the 420,000 acres of BLM land would place the flow in a critically low stage if not contributed.

Summer quality of the river and stream flows is particularly important. Management of BLM lands directly affects the quality of the water. Poor practises on even one tract in a streambed would discolor and silt the water for many miles below.

Clear,clean waters are important to summer recreationists. Adverse comment would be immediately forthcoming from this group in instances of mismanagement.

c. [illegible]

[illegible] for the township [illegible] been published in local newspapers. [illegible] field examinations [illegible] through [illegible] have been completed.

d. Fraudulent Claims [illegible]

To date, the [illegible] District has not been plagued with fraudulent claims [illegible] or have other [illegible].

e. Conflicts with Other Uses

Placer mining activity has been at a low ebb for a number of years, hence has been very little conflict with other uses.

Public Law No. 167 of 1955 which provides for multiple use of the surface of claims located after enactment of the Act, has been helpful in managing the surface resources on BLM lands. Likewise, provisions of the Act which provide for determination of or waiver of surface rights on older claims have been helpful in managing surface resources.

f. Problems

There are no major problems concerning mining. Occasionally minor problems arise, but the District has been successful in solving these problems on a case-by-case basis.

B. Water

In recent sessions of [illegible] it was declared that the summer flow of the [illegible] River is largely [illegible] on lands under Forest Service jurisdiction. However, the portion of the summer flow which originates from the [illegible] acres of BLM land would place the flow in a critically low stage if not contributed.

Summer quality of the river and stream flows is particularly important. Management of BLM lands directly affects the quality of the water. Poor practices on even one tract in a watershed would discolor and silt the water for many miles below.

Clear, clean waters are important to summer recreationists. Adverse comment would be immediately forthcoming from this group in instances of mismanagement.

Proper water management dictates keeping silt out of streams during the low stream flow period in the summer months to prevent silt deposits on salmon, steelhead, and trout gravel spawning beds.

6. Recreation and Wildlife

a. Significance of BLM Land to Total Recreation and Wildlife Picture

Because of the extent of BLM lands and because of the general checkerboard pattern of BLM lands, which influences an acreage picture double in size, the BLM lands have a high significance in the recreation and wildlife picture.

One of many examples of the significance of BLM lands in the general appearance of an area is the situation along the middle stretch of the main Umpqua River. Here, the alternating tracts of private lands along the river have been clearcut. The BLM timberlands along the river have not been cut. Thus, on the whole, the entire stretch of river is attractive.

If the BLM lands were also to be clearcut, the general picture would be otherwise. This example is duplicated many times in the District.

b. Demand and Use

(1) Now

Recreation demand over the total BLM area is moderate now and high in certain areas—particularly in the North Umpqua River area. Here fishing is good; in general, the scenery is unspoiled; and access is good.

(2) Future

It is estimated that within five years, the demand for recreation may be five times what it is now. In ten years, possibly ten times what it is now.

Among the factors which will influence the demand will be the completion of reconstruction and paving of the North Umpqua road from Roseburg to Diamond Lake. This road will be a popular cutoff for persons traveling north or south on highways No. 99 and No. 97—the east side highway.

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The Umpqua Valley will undoubtedly be discovered by Californians seeking relief from population pressure, smog, and city living. A widely circulated story in the Roseburg area states that all available lands bordering the Rogue River have been recently bought up by Californians. The Umpqua is next.

c. Developments

Camping and picnicking sites complete with facilities were opened this spring on Rock Creek and on Canton Creek--both tributaries of the North Umpqua River.

The Roseburg District has proposed complete reconstruction of a recreation site started by the C.C.C. at Tyee.

A large and complete facility is proposed on Rock Creek and in addition to the newly opened park site.

Enlargement of the new Rock Creek and Canton Creek facilities has been proposed.

Several wayside and picnic sites along the new BLM access road up Cow Creek have been proposed.

d. Length of Recreation Visits

At the present time, most of the recreation visits to BLM lands are one-day visits. Overnight or longer-stay facilities have been lacking in the past except for the camping area in the Susan Creek State Park and camping areas in the several small County Parks along the North Umpqua River. An old common complaint of visitors to the North Umpqua River was "It is beautiful, but there is no place to stay". This is being rectified as rapidly as possible by the BLM as funds allow. As the BLM facilities become more widely known, we expect many families to spend their vacations in our campgrounds as they do now in the Forest Service campgrounds along the McKenzie River in Lane County.

e. Species of Wildlife

(1) Native

The following is a partial list of native wildlife in the Roseburg District.

The Rogue Valley will undoubtedly be discovered by Californians as the [illegible] population pressures [illegible], and [illegible] living. A widely circulated story in the Roseburg area states that all available land surrounding the Rogue River have been recently bought up by Californians. The Rogue is [illegible].

d. Developments

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f. Species of Wildlife

(1) Native

The following is a partial list of native wildlife in the Roseburg District:

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1. White-tail and Black-tail deer
2. Roosevelt elk
3. Black bear
4. Cougar
5. Bob-cat
6. Coyote
7. Otter
8. Mink
9. Muskrat
10. Pine Marten
11. Beaver
12. Brush rabbits and jack rabbits
13. Racoon
14. Weasels, skunks, gophers, squirrels, and chipmunks
15. Porcupine
16. Ruffed grouse, mountain and valley quail
17. Hawks and bald eagles

(2) Introduced Wildlife

1. Red fox
2. Turkey
3. Chinese pheasants

f. Coordination Act Proposals

There have been no proposals under the Coordination Act in this area.

g. Access Situation

The access situation for hunting and recreation on BLM lands is unsatisfactory in some areas in the Roseburg District. The general checkerboard pattern of BLM ownership means that private lands must usually be crossed. Very often locked gates on roads where they enter private land excludes hunters and recreationists from the whole area served by the road. However, many of the roads are dirt roads and not suited for vehicle travel when Fall rains begin at the start of the hunting season. Loggers often have valuable equipment in the woods and thievery and vandalism can be expensive. Fire danger is often high during summer months and fire-fighting is costly and timber losses can be disasterous to the owner. Log truck traffic is hazardous to the uninitiated casual tourist.

As indicated, problems of access and their causes exist, but patience, education of the public, and persistence in trying to solve the problems will, in the long run, solve the situation.

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h. Conflicts with Other Land Uses

Recreation and wildlife does not conflict with other uses except for the previously mentioned problem of deer-browsing damage to some forest plantations; porcupine damage to some pine plantations; and the vast amount of Douglas-fir seed consumed by the white-footed deer mouse.

i. Problems

Problems with wildlife are mentioned in the preceeding paragraph. Recreation problems stem from the lack of facilities for picnickers in many areas. Use of undeveloped roadside areas for picnicking creates a fire hazard and sanitation problem.

j. Archaeological

The only known archaeological objects on BLM lands are a few mounds of loose rocks near Susan Creek Falls. The mounds are not burial mounds and their significance to the extinct Umpqua Indian tribe is unknown.

7. Commercial, Industrial, or Urban Development

a. Demand for BLM Sites

There has been no demand for BLM sites for commercial, industrial, or urban development.

b. Conflicts with Other Land Uses

Because there has been no demand, there have been no conflicts.

c. Degree of County Zoning

There is no county zoning ordinance at the present time in Douglas County.

VI. Conclusions

A. Significance of BLM management in the Master Unit to the local area

BLM forest management is very important to the local area. The fact that the O&C timberlands must be operated under

sustained yield principles in accordance with the Act of 1937 tends to stabilize at least a portion of the local lumber industry and also tends to stabilize the local communities.

The large volume of BLM timber offered annually contributes substantially to local business activity and economy. BLM timber sales value has been over $5,000,000 annually in recent years. The value to the local area in conversion of the logs to lumber and plywood is many times the stumpage value of the timber.

BLM management in the recreation field has, until this year, consisted of preservation of recreation values and potentials and making recreation sites available to the County and State under leases and permits. Two recreation facilities were constructed with BLM funds in the past fiscal year and opened to the public this past Spring.

Some 101 O&C sites and 8 Public Domain sites have been recognized as having scenic or potential recreation value. The sites have been listed and noted on maps, in management plans books, and tract books.

Proper management by the BLM of the areas having present or potential recreation value is extremely important to the local area. Mismanagement resulting in despoliation would change the character of the area and make it a much less attractive place to live.

Wildlife populations, especially deer and upland bird populations, have expanded because of the BLM practice of clear cutting virgin Douglas-fir stands in a staggered setting pattern. The increase in feed on the cutover areas plus the nearby refuge of the uncut settings affords an ideal condition for deer and birds.

BLM lands in this area have never been posted against hunting except by the State in times of extreme fire danger. Because regulated hunting is an important wildlife management tool, it is important to the welfare of wildlife that the lands continue to be operated under BLM management practises.

BLM range management is not significant to the local area. Almost all the BLM are forest lands and are not suited to a permanent grazing endeavor. Only 26 grazing permits, on some 4,000 acres, are in force at the present time.

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B. Watersheds

Watershed management by the BLM in the Umpqua Basin has generally been satisfactory to date. However, increased attention must be devoted to this activity. As the population increases and water supplies for all purposes becomes more acute, more citizens, groups, and special interests will review watershed practises with a critical eye.

It is necessary that a soil survey of BLM lands be initiated and completed as soon as possible. Through soils identification and studies of their characteristics, mistakes in road location and construction and in timber harvesting can be largely avoided by application of good soil management principles. Mismanagement of soils results in poor watershed management in the Pacific Northwest.

C. Demands for Use

1. Present

Since the advent of the post-war timber boom there has been a persistent demand for more BLM timber than could be offered under sustained yield principles.

Demand for recreation facilities has consistently been larger than the BLM could assist in supplying through leasing lands to the County and State. This situation still exists today in some areas of the Roseburg District.

There has been a persistent demand for summer home sites. One area at Susan Creek was classified for small tract homesites and a veteran's preferance drawing among the applicants was arranged. All the small tracts listed in the drawing have been awarded to the successful applicants or alternates.

One other possible small tract summer homesite area in the District has been investigated, but the pressure of other work has prevented progress on this tract.

2. Future

The future demand for BLM timber resources will accelerate as more and more of the private timber is cut out. Recently, the Douglas County Assessor stated that "Should the companies continue to cut at their present rate, all the privately-owned standing timber in the county will be felled by 1980".

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Recreation demands may increase five times in the next five years, and possibly ten times in the next ten years.

Water demands for all uses will increase rapidly as the population increases. Estimates as to when the expected influx of population will occur is a matter of local conjecture. Some local people expect a steady rate of population increase for ten to twenty years, then a sky-rocketing of population.

D. Tenure and Exchange Policy

The BLM should retain all of their present lands with the exception of a few small isolated tracts of O&C and Public Domain lands located mostly in the center area of the Roseburg District.

The District has recently submitted a request to the State Director for classification of all of the Public Domain lands as forest management lands except for some eight small isolated tracts. Complete justification for the classification request was contained in the report.

The BLM should actively engage in land exchange activities with private owners on BLM motion.

Improvement of the land pattern affords better and more economic management of the land resources. Funds and personnel should be made available to the District for an enlarged exchange activity.

E. BLM Balanced Use Management

Continued balanced use management by the Bureau of Land Management of lands and resources under its jurisdiction in the Douglas Master Unit is essential to the continued smooth running economy of the area.

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COOS BAY

SOUTH COAST

Master Unit Classification Study
Coos Bay District
South Coast Master Unit

Initial Analysis

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Location and Physiographic Features

The South Coast Master Unit, as the name implies, is situated in southwestern Oregon with the Pacific Ocean forming its western boundary. It extends from the town of Florence and the Siuslaw River on the north to the California border on the south. Its eastern boundary follows the summit of the Coast Range generally until Curry County is reached, then roughly parallels the Curry-Josephine common county boundary to the Oregon-California border. The South Coast Master Unit includes all of Coos County, most of Curry, the west end of Douglas and a very minor portion of the southwest corner of Lane County.

The topography of this province is dominated by mountain ranges, with steep broken mountain slopes being the rule and a relatively minor acreage of level land at scattered locations along the coast and in alluvial river bottoms.

This mountain system is cut by two major rivers, the Umpqua and the Rogue which rise in the Cascade Mountains to the east and find their way through the coastal mountains to the ocean. Other major river systems of the Master Unit include Smith, Coos, Coquille and Chetco. Along with numerous smaller streams these drainages originate in the coastal mountains which hold virtually no snow pack and are subject to extreme fluctuations between winter high water and summer low.

The low-lying coastal area from Florence to Port Orford is dotted with numerous lakes, a number of which are situated in the sand dunes immediately behind the beach. Largest and best known of these are Siltcoos, Tachkenitch, and Tenmile lakes.

Land elevations range from sea level on the coast to 3000 feet in the Coast Range Mountains in the north half of the Master Unit, and from sea level to 6000 feet in the Klamath Mountains to the south. The average elevation would be perhaps 1500 feet in the north half and 2500 feet in the south half of the Master Unit.

Social Factors

The major population center of the Master Unit is in the Coos Bay-North Bend area with a population of approximately 15,000 within the city limits. The population of the province is concentrated in small urban centers, most of which are forest products utilization centers. Rural dwellings for the most part are scattered along the limited farm lands situated in shoestring valleys which follow the more important rivers and streams. A steady population growth has occurred within the Master Unit during the past ten years. In a few communities it has even been spectacular, as for example,

Gardiner, Port Orford and Brookings which have more than doubled their populations in the past ten years. These population increases, for the most part, have followed expansion of the lumber industry in those localized areas.

Employment is subject to great seasonal variations. This situation comes about through major dependence on the lumber industry for employment, and the seasonal shutdown of logging operations due to adverse weather in winter. The lumber market exercises a strong control over lumber production and likewise causes fluctuations in employment.

Economic Factors

The two principal producers of income in the communities in the Master Unit are forest products and agriculture, with the former contributing by far the most substantial dollar revenue, though agricultural enterprise, chiefly dairying, contributes a geeater stability than the forest products industry. A substantial segment of the working force in the forest products industry, both mill workers and loggers, are part time farmers.

As a producer of income for the local communities, recreation is nearly on par with agriculture and appears to have a bright future in this area.

1. Forest Products

Every community of significance in the Master Unit has one or more forest products manufacturing industries. There are more than a hundred such plants in the Master Unit with major installations in the communities of Elkton, Reedsport, North Bend, Coos Bay, Bandon, Port Orford, Gold Beach and Brookings. Installed mill capacity, although it has been on a decline for some years, still exceeds the growing capacity of the area, in spite of the fact that intensity of wood utilization has improved greatly in the last few years. As a result of the excess mill capacity, private holdings of all but two or three major forest owners are being rapidly depleted and further mortality in wood manufacturing plants can be forseen.

By far, the bulk of the forest products produced in the area are shipped and sold outside the Master Unit.

2. Agriculture

The most important agricultural enterprise consists of dairying concentrated in the river valleys near the coast. The cool marine climate of these areas is conducive to year-round grass growth and exceptional dairying productivity. In addition to fresh products, dairying supports several cheese manufacturing plants. The size of this industry, unfortunately, is limited by

the relatively small amount of land suitable for pasture. A specialized agricultural enterprise, cranberry growing, is of local importance in the Bandon area. However, as in most agricultural pursuits within the Master Unit, other than dairying, this is conducted as a part time operation with the income of the farmer being supplemented usually by working part time in the logging or lumbering industry. While but little true grazing land exists in the Master Unit, a sizeable acreage of cut-over forest land is being grazed principally by sheep on the immediate coast in Curry County and in the southern half of Coos County. This has caused a major conflict with forest production through direct grazing damage, and more seriously, through repeated burning by the grazing operators to prevent encroachment by trees and brush. With forest land becoming increasingly valuable, the trend is away from this grazing use of cut-over lands and toward returning such lands to forest production.

3. Recreation

Recreational use centers around the scenic resources in fish and game. The cool summer climate at the ocean's edge draws many out of area visitors during the summer.

Even more attractive to large numbers of people are the coastal fishing opportunities. The Umpqua River and Winchester Bay at its mouth, the Rogue River, and the Coos River at Coos Bay are the principal areas for salmon and steelhead fishing. In 1955, according to Oregon Game Commission statistics, 53% of the salmon caught in Oregon by sports fishermen were landed in the southwestern Oregon area.

A very excellent big game hunting resource is also present and draws large numbers of hunters in season. While deer hunting perhaps has the largest following, hunting for Roosevelt elk, principally in Coos County, has increased dramatically in the past several years and draws many hunters from outside the Master Unit. Picnicking, camping, stream fishing, water-fowl hunting and boating also have very large followings in the Master Unit and draw visitors from outside the Master Unit in season.

Of major importance also, are beach combing, surf fishing, clam digging and crabbing, study of marine life and the various other recreational pursuits available on the sandy beaches, rocky headlands and the several bays of the ocean shore. The proposed Oregon Dunes National Seashore area has major significance in this Master Unit for the impact which it can have on the tourist trade.

4. Industrial Development

146 The province suffers from lack of diversification in industry with the only industry of any real consequence being concerned with manufacture of forest products. A pulp mill of small dimensions has been located on Coos Bay for many years and a second has recently been constructed. Construction is under way toward development of a third in the Reedsport area. These pump mills are important to the local area for increased forest utilization and the stable employment which they offer but limited availability of industrial water and the problems of effluent disposal make it unlikely that any large scale development can take place. In addition a very real conflict exists between pulp production with its attendant air pollution and water pollution, and the tourist and recreational trade.

5. Mining

Mining activity within the Master Unit is very slight. In the Eden Ridge area to the south of the Middle Fork of the Coquille there is evidence of mineral deposits and a considerable amount of prospecting and exploration is being carried on. It has been determined that there is a sufficiently large deposit of low grade coal to warrant development of a hydro-thermal power project in the area. Low grade soft coal was formerly mined in the Coos Bay area and in the early days there was placer mining for gold in coastal locations. There is no longer any activity for either gold or coal in these areas. Some petroleum exploration is under way and recently there has been a good deal of interest in offshore exploration for oil. No positive results to any of these petroleum explorations has yet been announced.

Transportation Systems

Water shipment of lumber is extremely important in the coastal communities having deep water ports. The Port of Coos Bay has gained the title of lumber shipping capitol of the world through its volume of lumber shipments both foreign and domestic. In addition to shipments from Coos Bay, there is some shipping from the ports of Reedsport, Bandon, Frankport and Brookings. Rail transportation, however, is not nearly so favorable, with service supplied only by a spur Southern Pacific line between Eugene and Coos Bay. Although Highway 101 on the coast and the major East-West highway along the Umpqua River have been greatly improved in recent years, the Master Unit generally suffers from lack of good public roads. The only other public highway connecting the coast with population centers inland in Oregon is Highway 42 from Coquille to Roseburg. This substandard road is currently being improved in a long-range relocation program.

The advent of Bureau of Land Management timber access road construction in 1952 has been of considerable importance in this Master Unit. Not only public

timber but private timber as well has been made accessible in heretofore undeveloped areas. This access road construction is a continuing program 147 and will have an even greater impact in the future as private timber becomes increasingly scarce.

Coos Bay-North Bend is the only community in the Master Unit served by an airline. Daily flights are made from the North Bend airport to other northwest communities.

Energy Systems

A privately owned steam-powered electrical generating plant is situated at Coos Bay, but the major source of electricity is Federal power from the Bonneville system. Development of a hydro-thermal powered project is under way on the South Fork of the Coquille River. This development will utilize steam-generation from a soft coal deposit in connection with hydro-electric development of the river.

Water

The province has a moderate, semi-humid climate, modified by local topography. Summers are dry, and winters are wet. On the immediate coast, climate is marine, precipitation is heavy, humidity is generally high and summer fog frequent. Precipitation averages about 70 inches, immediately adjacent to the Coast, and increases to probably 100 inches or more along the crest of the coast range.

Although the annual precipitation is great throughout the Master Unit, the absence of precipitation during summer months necessitates irrigation for most agriculture. This holds particularly for dairying and cranberry growing. Adjacent streams are normally utilized in irrigation and though summer stream flow is low, the amount of irrigation is limited more by availability of suitable land than by availability of water.

The long-time pulping enterprise at Coos Bay utilizes a coastal lake for water supply while the newly installed plant draws water from the underground reservoir beneath the coastal sand dunes. A proposed pulp plant to be located at the mouth of the Umpqua will utilize water from Siltcoos and Tahkenitch Lakes to the north. Owing to the lack of snow pack in the Coast Range, stream flows in the summer are extremely low and large volumes of water for either industrial or agricultural enterprises are not available.

The only potential for hydro-electric power thus far recognized in the area is that on the South Fork of the Coquille which is to be supplemented by a steam-powered generation plant.

Public Works Projects

Public Works Projects are limited to harbor improvements by the Corps of Engineers at the Umpqua, Coos, Rogue, and Chatco River mouths.

Labor Unions

Woods and sawmill workers have a strong labor union, as do longshoremen in the lumber shipping ports. These groups exert a considerable control over this principle industry and while not common, crippling strikes seem to
148 occur periodically. Fortunately, an increased maturity in both Management a and Labor Unions is reflected by the fact that these strikes occur less frequently than formerly.

Local Planning and Control Groups

A rather recently organized planning commission in Coos County has not yet made itself felt in zoning or other development control programs. It is expected that as the commission gains experience and backing it will become an important factor in promoting and planning development of Coos County.

Public Institutions

A Junior College was recently authorized by a vote of citizens in the area from Florence to Port Orford. A site has not yet been named for the college and the institution is otherwise in its initial formative stage.

Lands

Federal Government is a major land owner in the South Coast Master Unit. Federal lands under the jurisdiction of the Bureau of Land Management are the predominant federal lands in the northern half of the unit, while National Forest lands of the Siskiyou National Forest are not only the dominant federal ownership but constitute a major portion of all the land area in the south half of the unit. The southern end of the Siuslaw National Forest extends into the northern edge of the Master Unit.

Intermingled Bureau of Land Management and Forest Service administration was eliminated through exchange authorized by Public Law 426 in 1956.

The revested and reconveyed Oregon and California Railroad and Coos Bay Wagon Road grant lands are of considerable economic influence in western Douglas and in Coos County.

National land reserve lands are sparsely intermingled with the O&C and CBWR lands and are scattered or sometimes grouped in blocks along the immediate coast. These Public Domain lands in Curry County are distributed generally along the Siskiyou National Forest boundary.

Power site withdrawals or reservations are common along water courses, and coastal public lands in the vicinity of the major river entrances are in Coast Guard or Corps of Engineer withdrawals.

As previously mentioned, a proposed Oregon Dunes National Seashore area is situated mostly in the South Coast Master Unit. Some National Land reserve lands are included in the proposed area, however the bulk of the lands are made up of National Forest lands.

Also within the area is the Elliott State Forest, located between the Umpqua and Coos Rivers and generally to the west of the O&C lands. This is the largest single grouping of state-owned forest land and has been augmented somewhat by addition of Public Domain lands acquired under School Indemnity Selections. A minor amount of forest land is owned by Coos County.

149 A few major holders of private timber land own most of the remaining merchantable private timber in the unit, although a larger acreage of private timber land is probably held by medium and small size owners.

Use and Demand for BLM Land

1. Agriculture and Grazing

Virtually none of the BLM lands in the province has potential for agricultural development and very little has significant value for grazing. Agricultural trespass of a very minor extent is occurring in situations where corners of BLM property extend into farmed stream bottom lands.

Of not so minor extent is grazing trespass on cut-over BLM forest lands. Numerous livestock operators treat these public lands as open range and make no attempt to withhold their stock from the public land. Such trespass of cut-over land coupled with repeated burning in previous years has created a very serious problem in preventing forest regeneration on BLM lands adjacent to grazed private lands.

Private grazing use is authorized on a minor acreage of BLM land where there is no conflict between grazing use and forest production.

Noxious weeds are a very minor problem on BLM lands. Primarily they are a problem only where they serve as a source of infection for adjacent agricultural lands. An exception to this is a localized coastal strip in the vicinity of Bandon where gorse has invaded burned over lands and actually prevents the re-stocking of coniferous species.

2. Forestry

The importance of the BLM lands to the local community has been and is in much greater proportion than statistics of acreage and timber volume would indicate. Being public lands they are, of course, subject to much recreational use, more than can be readily estimated by a study of records at our disposal. The fact that it is public knowledge that we are by law operating under sustained yield management has been a potent stabilizing influence on the local communities and industries. One contribution to local economics is readily verified. That of the distribution of O&C

revenues to the counties by the O&C formula. Seventy-five percent of the revenues to the O&C Counties, twenty-five percent to the United States treasury. This is money that remains in the local County and is of direct benefit to the people living within the county. Coos Bay Wagon Road lands contribute payments in lieu of taxes which is equivalent to taxes paid by private land owners.

Only two or three major timber land owners in the master unit have manufacturing plants backed by a more-or-less permanent timber supply. Under the current rapid depletion of privately owned timber, the surviving wood utilizing plants will become increasingly dependent upon federal timber supplies. In the middle section of the master unit, the area dominated by the O&C and CBWR lands, these lands form virtually the only public timber supply. As has been previously suggested, the local communities will become increasingly dependent on the timber from these BLM lands.

The province is a forest transition zone in which Douglas fir is the most abundant species. A transition from north to south is manifest by a general decline in site quality for Douglas fir, the appearance of Port Orford Cedar and then redwood in mixtures along the Coast, and the appearance of many species not found further north such as jeffrey pine, knob cone pine, tanoak, Oregon myrtle, and canyon live oak. The transition is most rapid between the Umpqua and Rogue Rivers. However, from an economic standpoint, the entire master unit can be considered a Douglas fir forest zone. Interspersed with the conifers, especially in Curry County, is a minor volume of hardwoods. While a very small volume of alder is used in pulping in the Coos Bay area, for the most part these hardwoods are not utilized.

There are nearly three hundred fifty thousand acres of BLM administered lands in the Master Unit, nearly all of which are forest lands. These lands support a merchantable timber volume of approximately 9MMM board feet and will support an annual cut of approximately 175MM board feet.

The checkerboard nature of the land grants and the scattered nature of the remaining national land reserve lands present complex problems of access and management. An intensive program of management is under way on the O&C and CBWR lands and intermingled public domain lands. The allowable cut, plus additional volumes of salvage timber not chargeable against the allowable cut is offered for sale annually in this portion of the Master Unit. Access to the timber offered for sale is provided either through roads constructed as a condition of the sale, or through roads financed by a portion of the receipts of the sale of O&C timber.

Intensive inventory of these forest resources is nearly completed and a large scale program of forest land rehabilitation and prompt restocking of newly cut-over is in progress. Plans are well

advanced for an integrated management of these lands not only for production of timber but also for the utilization of the other resources which they provide.

The development of the national land reserve lands in the Coastal strip in Curry County has not advanced as far as that on the grant lands and intermingled public domain. Long-range plans have been developed looking toward eventual management on a par with that employed on O&C lands. Certain of these lands are advantageously grouped for management, while others could well be blocked through land exchange. Not to be ruled out is the possibility of exchange of jurisdiction on certain of these tracts with the Forest Service of the Department of Agriculture.

Fire protection is all under contract in the master unit, primarily with the Coos, Douglas and Western Land Forest Protective Associations. A small amount of acreage is likewise under contract for protection with the Forest Service.

3. Minerals

Mineral activity on BLM lands has never been important in the Master Unit. Claims are known to exist on Sixes River and adverse proceedings are in process against claimants. These are for the most part obviously fraudulent claims established for the purpose of getting summer homesites on the river. A few claims are known to exist in other localities, and it is suspected that there may be some claims on certain of the coastal dunes situated on public land.

4. Water

In the middle section of the Master Unit, the area occupied by the O&C and CBWR lands, water clarity and to some extent yield, is influenced considerably by the management of the BLM lands. Logging and road building can be extremely damaging to the site and have a great influence on water quality and also quantity. Watershed consideration is an important facet in the over-all management program for the South Coast Master Unit.

Although not of large influence on the drainages in which they are situated, because of the relatively limited acreage, watershed values are none-the-less given the same regard on the tracts of national land reserve as on the grant lands.

5. Recreation and Wildlife

Public recreation potential has only recently received widespread recognition as one of the important resources of public land and is certain to be a factor which will take on increasing prominence

in the future. Improvements in roads and transportation, expanding population, increased spending power, and shortened work weeks have all combined to increase the public demand for outdoor recreation. Large numbers of people turn to the forest and to the beaches to find outdoor recreation. An initial inventory of public recreation potential of the BLM lands in the Master Unit has been completed and our Land Management Planning is anticipating and providing for recreation site development on Bureau lands to satisfy this need. A start has been made toward recreation site development on Bureau lands during the past year. This work has been financed by contributions from the O&C counties from their portion of the O&C timber sale receipts. Such developments are similarly needed on choice recreation tracts of the National Land Reserve land.

The development of federal timber access roads is opening up and making available to outdoor recreation seekers more recreation opportunities on the BLM lands. Additional access to recreation areas is needed in the Master Unit, principally to gain access to the ocean beach areas blocked by private land holdings between the public lands and the Coast Highway.

Fishing and hunting are extremely popular pursuits in the South Coast Master Units. The BLM lands play host to large numbers of fishermen and hunters each season. These lands support large numbers of black-tailed deer and a sizeable herd of Roosevelt elk. The lands are important not only for providing access to fishing streams but also in providing spawning areas for salmon and trout. The fisheries resource is subject to severe damage if stream clearance and watershed values are not given consideration. Increased study and attention to logging and road building methods which will minimize damage to spawning fish runs are essential.

While conflicts between big game and reforestation are occurring, under proper management both game and forest can be provided. Damage to forest reestablishment by big game is generally a reflection of an over-population and an indication that increased hunter harvest in the area is necessary. As clear cutting of old growth forests favors big game production and likewise hunter harvest of game population allows forest reestablishment, it can be seen that an integrated management of the two resources can provide a bountiful return of both.

Local residents use the BLM lands heavily in recreational pursuits but perhaps as many visits are made by persons living outside the master unit. This is especially true in the case of elk hunters, salmon fishermen and campers.

Commercial, Industrial and Urban Development

Leading demand for BLM site use is in recreation tracts or summer home sites rather than in commercial or urban type of development. Suitable lands are not available to meet this demand and the attractive sites are generally reserved for general public rather than by exclusive use. There has been a localized but strong demand for year-round residence sites on the North Fork
153 of the Coquille River. While the river frontage has been reserved for public recreation use, a small amount of land in this area may be made available by leasing arrangements for year-round residents. The only industrial use at present is effluent disposal by a pulp plant in the sand dunes on the North Spit of Coos Bay. The site of the disposal is in a Corps of Engineers harbor improvement withdrawal and administrative jurisdiction of the land has not been decided. As a permit has not been issued by either the Corps of Engineers or the BLM, the effluent disposal is currently being done in trespass.

General Conclusions

The BLM land in the North half of the South Coast Master Unit, where they constitute a very significant part of the total forest lands, are extremely vital to the economic health of the dependent timber utilizing communities. While less vital in the South portion of the Master Unit, the national land reserve lands, nonetheless, afford a stability of forest production, limited though it may be, which is not present in the adjacent private lands.

The perpetual management of these public forest properties will provide for the maintenance of roads into vast areas which would otherwise be abandoned after private timber supplies are exhausted. These roads will not only be the arteries for the movement of BLM timber, but likewise will maintain access for fire protection, timber stand improvement and for recreation users.

The checkerboard pattern of BLM land ownership will provide at least a partial watershed following the general denuding of large sections of the master unit in rapid and careless liquidation of private timber holdings.

Though it cannot be proved, it is highly likely that this checkerboard pattern of ownership influences many private owners to allow hunting, fishing and other recreational use on these privately-owned lands since public access has been developed into the area through BLM constructed or purchased roads. Such generosity might have well be withheld in situations of solid blocking of private lands reached only by private roads and behind locked gates.

A limited amount of national land reserve lands are available in locations where title transfer would not seriously cripple existing management programs. With few exceptions, this availability should be limited to applications by the State for School Indemnity Selections purposes. The O&C and CBWR lands are reserved by law for permanent sustained yield forest production, and the intermingled public domain lands should likewise be permanently reserved. The national land reserve lands which are adjacent to this O&C strip or adjacent to the Siskiyou National Forest in Curry County for the most part

will make the greatest contribution to local and national economy if
154 retained in federal ownership and managed for permanent sustained yield
forest production.

If not for the stabilizing and income producing effect of O&C and CBWR lands in Coos County, it is highly likely that the County would be in serious economic shape. A large share of the tax base, timbered land would be cut out with no prospect of a second crop except through accident of nature. Lack of O&C revenue alone would constitute a major disaster as county officials have estimated that the average home owners property tax would be double without this source of income. Stable tenure and joint management of the remaining national land reserve lands will complement the management returns from the O&C and CBWR properties by filling the gaps in immature age classes in the whole forest property, broadening the annual allowable cut base, and providing forest products to more local communities.

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MEDFORD

MASTER UNIT CLASSIFICATION STUDY
MEDFORD MANAGEMENT AREA
ROGUE RIVER MASTER UNIT

INITIAL ANALYSIS

The Rogue River Master Unit is located in southwest Oregon and includes all or part of the following counties: Klamath, Jackson, Josephine, Curry, Coos and Douglas. It is bounded on the south by the Oregon-California state line; on the north primarily along the ridges separating the Cow Creek, Illinois River and the Umpqua River drainages; on the west by the Siskiyou Mountains and on the east by the Cascade Mountains.

Major rivers within the unit are the Rogue, Klamath and Applegate.

The topography of the area is variable with southeast portion being mostly plateau-like and the balance rough and mountainous interspersed with small valleys, of which the Rogue River valley is the largest. Elevations vary from a low of 500 feet along the lower Rogue River to a high of 9,497 feet (Mt. McLaughlin). Average elevation is 3,500 feet.

Major natural lakes are Klamath, Four Mile, Fish, and Lake of the Woods. Artificial lakes of consequence are Howard Prairie, Hyatt, Emigrant, Selmac, and Willow Prairie.

Social Factors

The bulk of the population within the unit is urban and concentrated within the cities of Klamath Falls, Medford and Grants Pass. Populations of communities varies from a few persons in rural areas to 25,000 in Medford and vicinity.

There has been a substantial increase in population within the unit during the past ten years and indications are that this will continue. The increase in population has taken place in both urban and rural areas. No major social or ethnic groups are in the area.

The labor force for the area is adequate except during fruit harvest time when there is a substantial influx of migrant workers. Seasonal unemployment for a portion of the population engaged in logging is fairly high during much of the winter months when many logging operations are closed down.

Economic Factors

157 The major income-producing occupation for the area is logging and lumber manufacturing, closely followed by agricultural products, mostly fruits. Income from recreational uses of the area is rapidly increasing and may possibly exceed that of agriculture in the near future.

A wide variety of climate is experienced within the Master Unit. Annual precipitation in the unit may vary from 12" annually in the southeast portion to as high as 60" or more in the northwest part of the unit. Most of the unit is hot and dry during the summer months and the major part of the annual rain and snowfall occurs during the period of November through April. Temperatures may vary from an excess of 100° to as low as -25° in the southeastern portion of the unit. Mean summertime temperatures for the area is about 50°. Length of growing season will vary from 125 to 175 days in the lower elevations.

A very complex variety of soils is found within the unit. These consist of alluvial soils such as: Aikon-Konohti, Olympic-Melbourne, San Joquin-Madera-Redding-McCammon Deschutes, Underwood Bab, peat and mulch soils. The erosion potential of many of the soils is high, especially when the vegetative cover is removed or other disturbances occur.

Forest Products

In recent years there were at least 80 operating mills in the unit. At the present time the number of saw and veneer mills probably does not exceed 40. Economic conditions dictate as to just how many mills are operating at a given time.

Present installed mill capacity far exceeds the growing capacity of the lands within the unit, and soon the number of mills will become fewer as they become dependent entirely upon government stumpage.

Private cutting policy in most of the area has basically been to cut everything and not to plan to manage the land for continuous forest production. Except for a few companies with a substantial ownership of forest lands, the bulk of the private forest lands are in small holdings.

The bulk of the manufacturing activity is concerned with lumber and allied products.

Range Livestock

158 About one-half of the National Land Reserve lands in the unit is under grazing lease for cattle operations. Most of the livestock operations are fairly small family units and generally integrated with farming operations Practically all the livestock operators are dependent upon grazing leases on federal lands to supplement their private ownership so that such operations may be economical.

Recreation

Many and varied types of year-round recreational opportunities are present within the unit. During the summer months there is a large influx of out-of-area recreationists who may enjoy almost every form of outdoor recreation, except deep-sea fishing. The Klamath deer herd winters mostly on National Land Reserve in the southeast portion of the unit.

Present recreational use within the unit has increased rapidly during the past few years. Future demands of recreational use are expected to increase very rapidly. It may be anticipated that satisfaction of recreational demand within the unit will become a prime factor in the economic structure of the area.

Mining

Gold mining primarily has long been carried on in the Rogue River Master Unit, although today its importance in comparison to other occupations is relatively minor. Many other minerals are present in the area, but like gold, until a more favorable economic situation or demand is created basic mining activity will remain of secondary economic benefits to the area.

Industrial Development

The second largest source of industry other than those allied with forest products is that of agriculture which includes a substantial amount of fruit production. This industry contributes largely to the economic welfare of the area especially in the Medford area. There are several manufacturing concerns which produce consumer goods, but at the present time they may be classed as minor. Favorable freight and power rates would do much to attract more industry within the unit.

A pulp mill in the area to use sawmill wastes and presently unused wood fiber material would contribute to the local economy. However, air pollution potential and other factors at the present time preclude such an installation.

Transportation

159 The Rogue River Master Unit is well traversed with good roads generally. These are constantly being improved and within a relatively short time practically all of the area within the unit will be accessible by roads.

Ashland, Medford, Grants Pass, and Klamath Falls are all provided with freight service by the Southern Pacific Railroad. Klamath Falls also has passenger service from this source.

Medford has air service via United Air Lines, Pacific and West Coast Airlines. Klamath Falls is served by West Coast only. No other cities in the area have such service by commercial airlines. Medford is also on the Winnemucca-to-the-sea route.

Major changes in roads at the present time are relocation of Highway 99 which will provide fast north and south travel through the area. Faster and easier routes of travel in east-west directions are a continuing process and will be of economical benefits to the area.

Energy Systems

Electrical energy is provided by a private electrical system. No public power systems are in the area.

At the present time the Klamath Falls area is served with natural gas via high pressure gas transmission line. A spur from this system may be extended into the Rogue Valley area in the future.

Water

The demand for agricultural surface water is high in the area and much productive agricultural area is now without sufficient water. Some minor development of ground water has been made but water from this source in comparison to need is minor.

Only two private power developments exist on the Rogue River. The bulk of the electrical power energy for much of the area is from development on the Klamath River or from power developments outside the master unit.

Precipitation varies from about 12" to 60" or more. For the Medford area the annual precipitation is 18 inches.

Public Works Projects

160 The recently completed Talent irrigation project by the Bureau of Reclamation will furnish water to areas which previously had no irrigation water. In addition a power plant is operable a portion of the year in connection with this project. The power developed is sold to the private power company serving the area.

Additional reclamation projects proposed by the Bureau of Reclamation will add many acre feet of water which will become available for agricultural use in the future.

Labor Unions and Cooperatives

Most of the larger mills of the area are unionized along with other trade union groups. As such, the unions affect the prevailing wage rates and working conditions. Farmer Cooperatives do not exert a strong influence on the economic situation of the area.

Local Control and Planning Groups

The counties within the unit have planning commissions to promote and control developments within the counties. Such commissions will continue to exert a larger influence in the development and zoning of land use within their respective counties. Jackson, Josephine, Klamath (Oregon) and Del Norte and Trinity counties all have recreational committees and recreational directors. Recently these counties have decided to make a joint effort to correlate their recreation endeavors by working closely with each other.

Public Institutions

Two state-supported schools are in the Unit; Southern Oregon College at Ashland and Oregon Technical Institute (Trade School) at Klamath Falls. The Oregon State University experimental farm is located at Talent.

Although not public, a large retirement home, Rogue Valley Manor, was recently completed in Medford. Likewise, Medford has become recognized as a well-known medical center attracting people from as far south as Redding, California.

Lands

Approximately 50% of the lands within the master unit are federally owned. Most of the federal lands are those administered by BLM. However, portions of the Rogue River, Umpqua, Klamath and Siskiyou National Forests are included within the unit boundary.

161 No national parks are within the unit although Crater Lake National Park is fairly close. Oregon Caves National Monument is located in the southwest portion of the unit.

National Reserve Lands within the unit include both Public Domain and O&C lands which amount to 803,890 acres O&C and 102,110 acres Public Domain for a total of 916,000 acres. For the most part these lands are suitable for forest production and this use along with others such as grazing and recreation is necessary for the general economy and good of the area within the master unit.

The public lands surrounding Howard Prairie, Hyatt Lake and Emigrant Reservoirs are administered by the Bureau of Reclamation and BLM.

National Reserve Lands for a half-mile along both sides of the Rogue River have been withdrawn for recreational purposes.

Other public lands are mostly state or county owned and the acreages in this category is not large. Past county policies favored disposition of their lands back to private ownership. However, the trend at the present time is for them to retain the lands they still own, especially in Josephine County if the land has a recreation potential.

Most of the private lands are in small holdings with the larger ownerships owned by lumber interests which, for the most part, are absentee owned.

The National Land Reserves are widely scattered throughout the unit except for the Galice Block, 140,000 acres, in the northwest portion of the unit. By congressional act those lands classified as O&C lands are under sustained yield management for timber production. The public domain lands within the unit should have the same level of management as the O&C lands.

Use and Demand for National Land Reserve Resources

Highest use of these lands is for forest production followed by grazing, recreation, homesites, mining and some agriculture.

Grazing use is administered under Section 15 of the Taylor Grazing Act and such use is an integral part of many ranching operations. There are, at present, 180 leases for this use in effect. Period of use is generally for 6 months during spring and summer. Actual range capacity for most areas grazed is low because of past over-use and other factors. The grazing potential for some of these lands may be increased by intensive management. In the strict sense of the word most of the lands uses for grazing are not grazing lands such as found in other areas. Grazing is one of the many uses of the land in a portion of the unit and is not the most important.

Problems encountered in grazing use are those of control distribution of stock, determination of carrying capacity in an area which is extremely variable in regard to topography and vegetation present, and establishment of desirable forage or grasses. Medusa-Head rye grass is widely distributed. Poisonous plants are not a problem.

Forestry

The volume of forest products removed from National Land Reserve lands within the master unit has a significant influence upon the local economy for the area. This influence is at least equal to that of the National Forests surrounding the unit. For the most part the timber types within the unit are complex. At the present time there are ten tree species which may be classed as commercial. In addition there are hardwoods such as oak, madrone and others which will become valuable for wood fiber in the future.

The inventory which was completed in April, 1959 on all National Land Reserve lands in the unit classed 732,114 acres as commercial forest land. An allowable annual cut of 240 MM board feet has been determined for the O&C and Public Domain lands as a result of the inventory. With increased intensive management of the lands, it is anticipated that the producing potential of the lands may be increased substantially.

Present plans being formulated for the lands within the Rogue River Unit are to plan for full balanced use for all of the National Land Reserve lands and resources within the unit.

Access for both Public Domain land and the O&C lands is a major problem in planning orderly timber harvests from these lands. Access for recreational use of the lands has not been a problem.

All protection from fire for the National Land Reserve is undertaken via contracts with the State and Forest Service. The checkerboard pattern of the BLM ownership does not lend itself for BLM to handle the protection phase of management.

Minerals

Many kinds of minerals are found in the area. Gold mining at one time was the principal activity of the area. However, today, mining is carried out to only a limited extent because of the capital expenditures required or lack of a market to make such operations profitable.

Public Law 167 examinations on about 50% of the National Land Reserve in the area have been completed.

A major problem exists in the abuse of the basic principles of the mining laws because under the guise of these laws many claims are located for purposes other than mining. Such practices interfere with the recreational use and use planning of many areas.

Water

163 The National Land Reserve within the unit exercises a strong influence on the surface water resource of the area. Good water management practices are necessary to help maintain the quality and quantity of the water resource.

Recreation and Wildlife

Hunting and fishing has always been popular in the area and in recent years more emphasis has been placed on other forms of recreation. The National Land Reserve in the area contributes largely to these activities and such activities are increasing rapidly.

The recently completed Howard Prairie and Emigrant Reservoirs have been swamped with recreationists and their uses from this class of people has overshadowed their original purpose for providing irrigation water.

Most of the recreational use of the lands takes place during the summer and fall months. Howard Prairie has a strong potential for use, ice skating, during the winter months. Other winter sports will increase as soon as facilities are made available for such activities.

Picnic and camping sites on National Land Reserves in the past have been nonexistent. At the present time, however, an active program is underway to provide such facilities for the enjoyment of the public.

Game animals are deer and bear which may be found throughout the higher portions of the area. Upland game birds are present mostly in the valleys. Duck and goose hunting is world-famous in the Klamath Falls area.

Commercial, Industrial and Urban Use

Demand for National Land Reserves for commercial or industrial use is limited. However, a very strong demand for National Land Reserve sites for homesites in the rural areas exists, and many people claim "squatters' rights" under the mining laws or just plain "squat" on an area.

There are two areas in the unit which have been classified for small tract leases. Classification of additional areas for small tract leases when appropriate should be undertaken.

Conclusions

164 The National Reserve Lands (BLM) and their management are highly significant in the Rogue River Master Unit. All phases of the area's economy and well-being are closely allied to these lands.

Range use of much of these lands is important to the livelihood of many small ranches. Increased emphasis must be placed on increasing the grazing potential of those lands which are suitable for this use rather than forest production.

Production of forest products on a continuous basis from all the BLM commercial forest lands in the unit is basic to the economy of the area and many of its industries are dependent upon the resources of these lands. Idle forest lands must be placed into a productive status as rapidly as possible.

In the past the recreational potential of the lands has been largely ignored. To meet the demands of an expanding population it is necessary that this phase of management of the lands be expanded rapidly, both by BLM and the counties for sites on National Land Reserve which they may wish to develop.

The National Land Reserves within the unit are important for production of initial run-off and maintenance of water quality. The increasing demands for water require that in the future more emphasis on watershed management must be placed on the National Land Reserves within the unit.

There is a significant demand for urban use of the public lands in the unit. Classification of the lands as to their most proper use must be made and no further small tract leases issued until this has been done and appropriate county zoning regulations developed.

Land exchanges should only be undertaken in areas where they will enhance the balanced use concept of the land. Generally, the lands now managed by BLM should remain in public ownership.

Continued balanced use management of the National Land Reserve must be applied to the lands in the unit. The public domain lands should receive intensive management along with the O&C lands. Since the public domain lands are intermingled and similar in character to the O&C lands, it is necessary to consider them as a single unit in balanced use management.

The basic economy of the area within the unit is largely dependent upon continued balanced use management of the National Land Reserve. Increasing demands by a rapidly expanding population dictate that such management practices be applied to the lands.

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PRINEVILLE

LOWER DESCHUTES

Master Unit Classification
Prineville and Baker Management Areas
Lower Deschutes, Oregon Master Unit

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Initial Analysis

Physiographic Features

The Lower Deschutes Master Unit is located in North Central Oregon. It is bounded on the north by the Columbia River, on the west by the Cascade Mountains, on the south by the Ochoco Mountains and on the east by the Divide between the John Day River and Willow Creek and the Wheeler-Grant County line.

The Master Unit includes all of Hood River, Wasco, Jefferson, Wheeler and Sherman Counties, the western three-quarters of Gilliam County and one township of Morrow County. Approximately 230,000 acres of National Land Reserve are in this Master Unit.

Major internal physiographic features are the lower reaches of the John Day River and the Deschutes River with its tributaries, the White and Metolius. The main rivers have cut steep deep canyons through the gently rolling to broken uplands through which they flow. Except for the Cascade and Ochoco Mountains, which form boundaries of the Master Unit, there are no important mountains in the area.

Large, natural lakes are lacking in this Master Unit. Upon completion of the John Day Dam on the Columbia and Round Butte Dam on the Deschutes, there will be four major reservoirs. The two existing reservoirs are Lake Simtustus behind Pelton Dam on the Deschutes and the pool behind The Dalles Dam on the Columbia.

Social Factors

The total population of this Master Unit is approximately 49,000 and has increased sixteen percent since 1950. The following towns and cities ranging from 150 to 11,000 people are locally significant: Hood River, The Dalles, Moro, Madras, Condon, Arlington, Wasco, Grass Valley, Fossil, Kinzua, Maupin and Mitchell.

Except for the residents of the areas adjacent to the Columbia River, many of the people are direct descendents of the original settlers of the area. The population is rural in character and is generally tied to the agricultural economy. However, consolidation of agricultural and range holdings and construction projects have created a trend toward a more urban population.

167 In the fall there is a considerable influx of migrant workers into the area to harvest row and fruit crops grown adjacent to the Columbia River. Seasonal unemployment, however, is generally low.

There is a significant population of Indians from the Warm Springs Reservation and they have considerable influence in the area. Several studies for termination of the reservation status have been completed, but no action has been taken yet. Most of the land on the reservation is tribal lands rather than individual allotments.

Economic Factors

The economy of the area is dependent on local natural resources, including the newly completed aluminum plant at The Dalles using hydro-energy.

1. Agriculture

Agriculture, including irrigated fruit orchards, row crops, legume and grass seeds, hay, dairying and dry land grain farming, ranks as the most important source of income. Irrigated farming, except in the areas very close to the Columbia River, is almost wholly dependent upon surface water.

Per acre, fruit is the most valuable crop produced and orchard limits are determined by elevation. Lower areas have a sufficient frost-free period to enable fruit to ripen. Of the row crops, potatoes and peppermint are successfully produced as they are capable of surviving mild frosts during the growing season.

2. Range

Hay and pasture production is large, considerably more than the range production. Consequently many cattle, both beef and dairy are raised entirely on cultivated lands.

This is not the situation in the southeast part of the Master Unit where the economy is more typical of usual hay-range cattle operations. The annual hay production is about equal to winter consumption.

Soils in the dryland farming areas are subject to accelerated erosion especially if they are left open during the winter months.

Except in the southeast portion, the range livestock industry is composed of compact ranches scattered throughout the area. Many of the operations are adjuncts to dry farm grain operations and cattle range on areas too poor or steep for cultivation, and also on harvested grain fields. Cattle are usually shipped elsewhere for finishing.

168 The few remaining sheep operations, to adapt to the scattered nature of the grazing land, are migratory. This is one reason for a large acreage of stock driveway withdrawals in Wheeler County.

There is very little winter range and livestock must be fed hay for at least three months.

On the whole, livestock operations are economic paying operations although if they were to stand alone they might be marginal except for some of the large, well financed ranches.

3. Forests

The forest products industry is located on the perimeter of the Lower Deschutes Master Unit with eight medium to large sawmills. It is more important to the communities where the sawmills are located than to the overall economic base of the area. There never has been too extensive an amount of private forest land in the area. As a result the industry is stable having grown up with its stumpage supply based upon steady and dependable Federal or Indian timber sales. Private lands, however, have been heavily cut. Lumber manufacture is largely pine boards which are shipped from the area for re-manufacture and use.

Woodlands do not occupy significant acreages and are valuable primarily for scenery. These woodlands generally extend from commercial forested areas to agricultural zones or the desert.

4. Recreation and Wildlife

The large area of cultivated land in the Master Unit is generally excluded from recreation use except for upland bird hunting. The area is traversed by main north-south and east-west highways; but because of the more desirable recreation areas immediately adjacent, most out-of-state tourists are not attractedto the area. At present the Lower Deschutes drainage lacks facilities and roads which are needed to change this pattern. The area does have many features, which if developed would create a thriving tourist industry.

"Rockhounds", fossil hunters and archeologists have a fertile area for their explorations; the John Day river gorge is very productive for remnants of ancient life and culture, and attracts some out of area enthusiasts. Archeological examinations, although numerous, have been limited to small explorations.

The Deschutes and John Day Rivers offer excellent fishing and their deep canyons are very scenic. These canyons have not been fully developed for recreation because of the difficulty in building roads from the high benches to the canyon bottoms and intervening private land ownership.

The hot summer climate creates a heavy demand for water recreation, and several state parks along the Deschutes and Columbia are attempting to meet this need. Cove Palisades Park is being flooded out in 169 conjunction with construction of Round Butte Dam on the Deschutes. Lake Simtustus formed by the Pelton Dam is a favorite area for fishing, boating and water skiing.

Hunting for upland birds and deer is generally heavy. Suitable big game habitat limits its population of deer, elk and antelope in some areas. The Warm Springs Indian reservation would be an excellent hunting area but is not generally open to the public.

The big game population conflicts on their winter range with livestock for forage. This has not developed into a serious problem.

As facilities for servicing recreationists are constructed and the road from the Portland population center is improved, the current medium demand for recreation will move up into a higher bracket.

5. Minerals

Mining for gold in the southeast portion of the Master Unit has been an economically important development; but has recently become a habit or hobby to the older prospectors who have placer mined for many years.

There are no known leasable minerals and very little commercial development of common varieties.

Secondary Industrial Development

Completion of the Dalles Dam on the Columbia River has brought the first heavy industry into the area. Harvey Aluminum Company is now operating a reduction plant using hydroelectric power.

Other industry is primarily for processing agricultural goods, with food processing and grain elevators predominating.

At present, there are no major industries planned within the Master Unit, but improved transportation and energy systems may attract them.

Transportation

The lower Deschutes Master Unit is served by U.S. Highway 30 (soon to be built to interstate freeway quality), U.S. 26, 97 and 197, and Oregon State Highways 19, 52, 206, 207, and 216. The big problem of highway transportation is the low quality of the highways between U.S. 26 and U.S. 30. Compared to these two east-west highways, the north-south highways are poor and discourage travel north and south.

Mainline railroads follow the Columbia and the Deschutes with spur lines from the Union Pacific mainline to Grass Valley and Kinzua.

The area is poorly served by airlines, and automobile transportation to Portland is much faster. Completion of The Dalles and John Day dams along with Bonneville Dam will give the Columbia River slack water navigation from its eastern most boundary to the Pacific Ocean. There is a movement to construct a deep water port at The Dalles for export of locally produced and manufactured commodities.

Energy System

The Bonneville Power Administration markets low cost electric energy produced by the Corps of Engineers dams on the lower Columbia River. Hydroelectric power is also produced on the Deschutes River by the Portland General Electric Company. The hydroelectric facilities are not storage dams and are dependent upon upstream runoff.

A high pressure inter-state natural gas transmission line traverses this area. Use of gas to date has been limited to domestic and light industrial use.

Water

Water is basic to the local economy. Much of the water used originates in the Central Oregon and John Day Master Units to the south and east. However, local sources are important in the general agricultural development of the area. Use of ground water except for pumping along the Columbia River is generally limited to domestic use.

Annual precipitation varies from 10 to 60 inches, and the amount an area receives is largely dependent on its elevation.

Public Works Projects

The Bureau of Reclamation's Deschutes Project centered at Madras is the only existing Federal irrigation project in this Master Unit. Dams, navigation and flood control structures on the Columbia River have been constructed by the Corps of Engineers.

The works of these two agencies have done much to aid development of the Lower Deschutes Master Unit.

Labor Unions and Cooperatives

Labor Unions on construction projects and at the Harvey Aluminum Plant are strong and effective in securing favorable contracts for their members.

Farm Cooperatives except for grain elevator associations are not considered too strong.

171 Local Planning and Control Groups

The predominantly rural agricultural economy has not been conducive to the development of local planning and control groups to give the area effective zoning.

Public Institutions

County seats are located in Hood River, The Dalles, Moro, Condon, Fossil and Madras. These cities are the nuclei of local government institutions.

The Yakima Indian Reservation is located on the Washington side of the Columbia River and its influence on this master unit has been mostly felt in limited economic activity. All bridges over the Columbia are toll bridges and tend to be a barrier to trade.

The Lands

In total, National Land Reserve lands do not constitute a major portion of the lands within this Master Unit. However, much of it is strategically located in areas of potentially high public use. Generally the lands under BLM jurisdiction are concentrated along the Deschutes and John Day Rivers. The remainder of the BLM land is scattered on the non-agricultural sites between valleys. Much of the National Land Reserve is in single purpose withdrawal status with power sites along the rivers and stock driveways predominating. These withdrawals are in need of review to determine whether they are still needed. If not, the lands should be restored to full balanced use management and development. The public lands along the Deschutes River have been classified under Section 7 of the Taylor Grazing Act for multiple use public management. Similarly located lands along the John Day should receive the appropriate classification.

Portions of the Mt. Hood, Deschutes, Umatilla and Ochoco National Forests occupy the mountainous forested areas on the edges of the Master Unit.

Another area under administration of the Department of Agriculture is the Central Oregon grasslands, a Bankhead-Jones Title II land utilization project between Gateway and the South Boundary of the Master Unit.

The Warm Springs Indian Reservation also occupies a considerable portion of Wasco and Jefferson counties.

The Sierra Club's proposed Volcano National Park might also include a portion of the National Forest lands in this Master Unit.

State owned lands are scattered throughout and have the same general characteristics as BLM land, ie, non-agriculture in character.

County lands tend toward good quality and are sold as soon as they are acquired.

Use and Demand for National Land Reserve

172 1. Agriculture

There is not a significant demand on the National Land Reserve for agricultural uses; but there is a limited agricultural trespass problem in corners and strips adjacent to developed farm land. The locations and characteristics of the BLM lands is such that it is unlikely that they will be included in any future irrigation projects.

2. Range

On the whole, range livestock industry on the National Land Reserve is not quantitatively important. However, to the 210 lessees who have Section 15 leases the Federal range is highly important. The scattered nature of the grazing lands causes problems in range management which require more intensive methods and practices.

Grazing use has few apparent conflicts with other uses of the National Land Reserve principally because the BLM land is scattered. As demands for other uses of the land increase, a problem may develop as much of the scattered land is closed to the public by private roads and fences.

3. Forestry

Forestry activities on National Land Reserve are locally important, particularly as fillers to operators between large Forest Service sales. The high value timber is usually located adjacent to the National Forest lands and is primarily Ponderosa pine. The annual cut on this and the Central Master Units is 9 million board feet of salvage and sanitation timber pending completion of an intensive inventory and declaration of an allowable cut.

Fire protection is done by contract with the Forest Service on the lands adjacent to the National Forests. The National Land Reserve within the grazing district is protected by force account crews. The agricultural land throughout the valley area keeps fire from becoming a major problem.

Forest management on the National Land Reserve has few conflicts with other uses. The high order selective cutting practices of the BLM on the pine stands leave the forest practically undisturbed. Even for recreation use, where conflict between timber harvest and camping is readily possible, there has been no serious conflict of uses to date.

4. Minerals

In the past gold placer mining on the John Day drainage has been extensive, but has since declined to virtually nothing. Common varieties are the most important minerals now. About 10% of the National Land Reserve has been examined under the provisions of Public Law 167 of July 1955.

As in the Central Master Unit there is the problem of appropriation of public lands by "rockhounds" and fossil hunters under the mining laws.

5. Recreation and Wildlife

The greatest future need and use of the National Land Reserve in this Master Unit will be for recreation. BLM lands are vital to the wildlife of the area as winter range and protective cover because of the high percentage of agricultural lands.

Summer recreation in this Master Unit needs water to be attractive because of the extreme temperatures. The concentration of the National Land Reserve along the Deschutes, John Day, White and Metolius rivers make ideal sites for development and provides areas to support and complement water recreation. Much of this land is included in Powersite withdrawals which hamper development by public agencies.

In order to realize the recreational potential of the area it will be necessary to acquire suitable and retain suitable access to river canyons. Subsequently, recreation site construction will be needed to utilize choice fishing and picnicking areas.

At least 200 miles of service roads with an appropriate number of camping and picnic sites on the rivers are needed. In addition to supporting water recreation, these roads would open to the public spectacular canyon scenery and areas fertile with artifacts.

On the north, the "Save the Columbia Gorge Committee" is active and has a vital interest in public land retention for scenic purposes.

6. Water

The National Land Reserve is important in maintaining the quality of water passing through and being used in this Master Unit.

Commercial, Industrial and Urban Use of National Reserve

The low population of this Master Unit has not created a significant demand for site use of the National Land Reserve. There is localized demand near dam construction areas for trailer parks and machinery shed sites and there has been application for an oil tank farm on public land near Maupin.

The generally rolling topography of this area has made mountain tops very important to microwave communication systems. These mountaintops have a dual use after construction of the communication facilities as the roads to the top attract sightseers.

The town of Arlington is being moved as it will be flooded by the pool of the John Day Dam. Expected expansion of the new town may create a demand for National Land Reserve nearby.

General Conclusions

1. In general, the portions of the National Land Reserve valuable for recreation and timber use are proper for retention in public balanced-use management.

2. National Land Reserve watersheds, although minor in acreage, are extremely significant in maintaining the quality of water.

3. Present use of existing recreation facilities is high; however, these facilities are inadequate and as more are constructed they will be in demand.

4. The high value timber on the National Land Reserve, although overshadowed in volume by the National Forest and Indian Reservation timber, is important to the local economy and should remain in high order management.

5. Some parts of the National Land Reserve are too scattered to be efficiently managed as rangeland, these should be considered for transfer to private ownership. This transfer should be by exchange to promote better management of range, forestry, recreation, and water resources of the area.

6. Generally the needs for commercial, industrial and urban use lands are being met by private lands.

7. Development of an industrial complex as a result of public power and improved North-South Highway will change economic and land use patterns. This will create additional demands for use on the public lands.

8. A plan for recreational development must be completed before restoration of powersite classification on lands adjacent to a river is removed.

9. There is a pressing need for early completion of the withdrawal review, including a satisfactory resolution of jurisdiction over land use now included as a part of the National Grassland.

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CENTRAL OREGON

Master Unit Classification Study
Prineville Management Area
Central Master Unit

Initial Analysis

The Central Master Unit is located near the geographic center of Oregon. It is bounded on the West by the summit of the Cascade Mountains; on the North by the Ochoco Mountains; and on the East by the divide between the John Day and Crooked River drainages. The South boundary has no definite physical features and follows the line between the Bend District and Lakeview District areas of responsibility.

Generally the Master Unit includes the Crooked and Upper Deschutes River drainagee.

Prominent landforms in the Master Unit include the Central Oregon Cascade peaks, the Ochoco Mountains, the Maury Mountains, and the High and Low deserts separated by Horse Ridge.

Forest Service lands occupy the mountain areas. National Land Reserve lands are in the lower elevations, and are generally rolling plateaus bisected by deep canyons. The National Land Reserve in the Southwest portion of the Master Unit is in a flat pumice area.

Elevations range from 2,500 to 10,000 feet with an average of about 4,000 feet.

Of the several significant bodies of water in the Master Unit only two are in National Land Reserve areas. These are the Ochoco and Prineville irrigation reservoirs.

The Master Unit includes all of Crook and Deschutes Counties, the northern 1/3 of Klamath County and small portions of Lake and Harney Counties.

Social Factors

The Central Master Unit has a localized urban population with 85% of the people concentrated on the Bend-Redmond-Prineville triangle. In addition to these three cities, Sisters and LaPine serve local and tourist trade requirements. Population of communities ranges from 11,936 in Bend to 10 in several of the crossroads-store villages.

There has been no area-wide change in population during the last 10 years; however, the trend is from the rural areas to the cities. This shift appears to result from the consolidation of small farm and ranch holdings to form larger and more economic units.

177 Except in the spring, the population appears to be larger than recorded because of the large number of recreationists which use and enjoy the area.

Seasonal unemployment is high in winter when logging operations are closed. Long term unemployment is closely correlated with the pine lumber market and the decreasing availability of timber stumpage.

During the harvest season there is a significant influx of migrant agricultural harvest workers into the area. U. S. Highways 97 and 20 are the main routes of travel for these workers.

Economic Factors

Harvest and Management of Forest Products is the major income-producing occupation in the Master Unit. This is followed by Agriculture, including range livestock, and recreation, which are about equal. Recreation is increasing and soon will surpass agriculture as an income-producer.

1. Forest Products

There are several medium to large sawmills in the Master Unit. This mill capacity exceeds the timber growing capacity of the area and as a result some sawmills have been permanently closed. Cutting practices on private lands have generally been much heavier than the high order selective systems practices on federal lands. However, the larger and better financed mills do have forestry programs which, when supplemented by federal stumpage, will enable them to continue operations on a long term basis.

The smaller holdings of private stumpage are practically all cut out.

The mills produce lumber primarily for use and remanufacture outside the Master Unit.

As yet there is little commercial use of the large amount of juniper growing in the area, although they are of scenic importance for such purposes as juniper waysides along principal highways.

178 2. Agriculture

Farming in this Master Unit is largely dependent upon surface irrigation water. Row crops, hay and grain are the principal products.

The growing season tends to be hot and short with the possibility of a frost every month of the year. This factor creates a hazard for potato production, however, potatoes are a major crop in the unit. Forage crops (hay and grain) are more certain to produce a harvest. Cattle operations are basic to the agricultural economy of the area, using hay, grain and cull potatoes to feed the cattle.

3. Range Livestock

Cattle dominate range livestock operations in this Master Unit. Only four of many early 20th century sheep operations remain. These range livestock operations are generally integrated with the farming operations in the valleys because of the necessity to feed hay during the cold and snowy winters. Except for several large nonresident owned ranches, cattle operations tend to be family units which provide an income for the owner-operator.

A considerable amount of the locally grown livestock is fattened and finished in the area. The Redmond Auction Yard has local acceptance, satisfying both buyers and sellers.

4. Recreation and Wildlife

The Bend area is known as the Central Oregon Vacationland, and attracts many out-of-state and out-of-area recreationists for both long and short term enjoyment.

Almost every form of outdoor recreation, except salt water fishing and sailing, is available and is used heavily. The heavy use is hard to describe, but the following statistic will give an insight. Prineville, a city of 3,000, had 30,000 deer hunters in the immediate area during the 1960 hunting season. This high out-of-area use is in addition to the use by local residents.

This increasing demand is the reason why service to recreation is passing agriculture as the second most important income-producing occupation. The dry climate of the area is a particular attraction to Oregonians from the west side of the Cascades where rain is a continuing event during the fall, winter and spring. 179

The high demand for recreation in this Master Unit by out-of-area residents has created the usual conflicts between the visitors and the resident landowners. These conflicts are in need of settlement as the demand for recreation opportunities is expected to increase manyfold. A large landowner, the Hudspeth interests, have undertaken a program to charge sportsmen for the use of their land. This may be a growing trend with other private landowners.

In contrast to much of the recreation opportunities in Oregon, the Central Master Unit has many opportunities for land recreation of the less strenuous types. Much of the rolling country is rich in artifacts and stones which are attractive to rockhounds. Spectacular scenery and lava ice caves are readily reached by hiking on easy trails. This type of recreation appeals to older people and will create an increasing demand for sites for them to camp for rather extended periods.

This area because of the ease in moving over it is very attractive to archery enthusiasts. Special big game seasons are reserved for them.

A potential problem which may come with recreation use is the annual drawdown of irrigation reservoirs. Such drawdowns makes them much less desirable for fishing and water sports.

5. Minerals

The Central Master Unit is not highly mineralized and mining activity has never been significant.

Common varieties are probably the most important, with some cinnabar extraction during periods of good markets for mercury.

Bentonite is mined locally and may develop into a significant industry if its use in the aerial spray used to fight forest fires expands.

Secondary Industrial Development

The secondary industries of the Central Master Unit are closely tied to the natural resources of the area. Processing of agricultural products and a minor amount of secondary lumber manufacture is about the extent of the secondary industrial development. 180

A pulp mill to use sawmill waste and lodgepole pine has been proposed for the Bend area; however, current overcapacity in the pulp and paper industry and lack of water has slowed development.

Transportation Systems

The Central Master Unit road system is characterized by good high-speed roads connecting the major cities and towns with other areas. There is a lack of service roads open to the public into the more remote areas.

U. S. Highways 97, 20, 26, and 126 serve the area. Unpaved state and county roads lead toward the more remote areas. The area is served by one commercial airline.

The area is served by the mainline of the Southern Pacific and Great Northern Railroads with a city-owned spur line to Prineville.

At present there are no major proposed roads or transportation systems.

Energy Systems

The Master Unit is presently served by both public and private electric systems and a high pressure gas transmission line. The proposed California transmission line inter-tie to be constructed by Bonneville Power Administration will pass through this Master Unit. Bonneville Power Administration has recently constructed a transmission line through the area which continues on into Nevada. This will result in an increase of pumping and use of irrigation water.

There are no proposed public power production projects in this Master Unit.

Water

Irrigation water is essential to the agricultural economy and practically all the surface water is used within the area for irrigation. It is overappropriated and many farmers are dependent on waste irrigation water.

There has been little ground water development in the agricultural areas. High electric costs may be the reason for this.

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Precipitation in the Central Master Unit varies from 6-60 inches, depending on the elevation, with the average 10 inches. Most of this comes in the winter season.

Public Works Projects

Heavy construction appears to be limited to the Bureau of Reclamation Prineville and Crooked River irrigation water storage projects.

Labor Unions and Coops

Labor unions in the area are not too strong. Farmers' cooperative groups are strong and effective.

Local Planning and Control Groups

Deschutes County has recently organized a Planning Commission to promote and control development of the county. This Planning Commission may eventually move into a rural zoning program to control use of the county's land resource.

Klamath County has a similar group which is effective in guiding rural development.

Public Institutions

Central Oregon Junior College at Bend is the only state-supported institution of higher learning in the area. County seats are located in Bend for Deschutes County and Prineville for Crook County.

Lands

A majority of the Federal lands in this Master Unit are in National Forest withdrawals. Portions of the Ochoco, Deschutes and Fremont National Forests are included. The Sierra Club of California has proposed a Volcano National Park to be partly carved from National Forest lands in the area.

National Land Reserve areas are of three general types: commercial forest lands adjacent to the National Forests; high desert grass-sagebrush and low desert juniper areas. The latter is characterized by lava and basalt rims which dissect the area.

Except for the LaPine area in the Southwest corner of the Master Unit, the BLM lands are within the organized Crooked River (0-5) Grazing District.

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The public lands adjoining the newly completed Prineville reservoir may be included in a wildlife refuge.

The public lands along the rivers are generally withdrawn either for reclamation or power site purposes. However, this withdrawn acreage is not a high percentage of the total. These are valuable recreation lands.

There is a little state-owned land in Sections 16 and 36 in the Southeast corner of the Master Unit.

Deschutes County owns approximately 70,000 acres of land in the Southeast corner of the grazing district. The county court is very interested in exchanging this land for land of equal value in the Bend-Redmond-Prineville triangle. Acquisition of this county land would greatly facilitate BLM management programs in the area and title transfer of the National Land Reserve in the triangle area would relieve the urban and industrial pressures on the Public Domain in that area.

Use and Demand for National Land Reserve Resources

1. Agriculture

Acreagewise very little National Land Reserve is used or has a potential for agricultural development with the possible exception of a small acreage used for dryfarming for grain and rye hay, an extremely marginal operation in almost every case. However, agricultural trespass on corners or strips next to private agricultural lands represents a problem.

2. Range

The National Land Reserve lands administered under Sections 3 and 15 of the Taylor Grazing Act are integral parts of ranch operations using them under permit. There are about 240 permits and licenses for use of the land.

Use is for a maximum of 7 months commencing in April and as in other range livestock areas, spring range is a critical factor. The hay producing capacity of the area is generally greater than the range producing capacity; consequently, the pressure for range use is high.

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The National Land Reserve range averages only fair condition because of overuse, fire, dry climate, and in some cases ecological succession. However, the range has an excellent potential for recovery and eventually will carry many more animals than now.

Poisonous plants and noxious weeds are not a significant problem.

Competition between livestock and big game is keen. To intensively manage the big game, considerable mileage of service road needs to be constructed. To resolve the competetion between livestock and big game, range improvement and range management must be accelerated.

The most significant problem of range management is to achieve use of the range by both livestock and big game commensurate with the carrying capacity.

3. Forestry

The volume of Forest Products removed from National Land
Reserve is overshadowed by the production from National Forests.
However, the small sales offered by the BLM are very attractive to
184 small operators and to larger operators as fill-ins between large
Forest Service sales.

National Land Reserve timber in the northern portion of the Master Unit is mostly Ponderosa pine with some Douglas-fir in the higher and wetter sites. Much of this timber lies adjacent to National Forest lands. The LaPine area has 42,000 acres of lodgepole pine, much of which is too small for sawlogs; but will eventually be valuable for pulpwood production. The lodgepole pine resource of this Master Unit is great and there is a need for more woodworking capacity similar to the John Mansville hardboard plant near Chiloquin (Lost River Master Unit) to effectively utilize this species and to strengthen the economic basis.

The present BLM Forestry program is two-fold. Pending completion in 1962 of an intensive inventory in the LaPine area, the timber harvest is limited to sanitation and salvage cutting. In this and the Lower Deschutes Master Unit the annual cut on National Land Reserve is 9 million board feet per year.

Juniper woodlands cover extensive areas of National Land Reserve. Competition from steel fence posts and high labor costs have reduced the demand for cutting these trees into posts. However, the junipers occupy the foothill country and provide cover for big game. In some areas junipers have become the dominant vegetative cover and have reduced forage available for deer and domestic livestock. Except for a small fringe area under contract with the Forest Service, fire protection in this Master Unit is by BLM personnel on a force account system. The scattered land pattern in the Master Unit makes this an expensive proposition as fires on private land adjacent to the National Land Reserve must be suppressed to protect the National Land Reserve and there is virtually no provision of machinery for recovery of this cost by the United States.

5. Minerals

There has never been significant mineral activity on the National Land Reserve. However, all proposed timber sale areas have been examined under the provisions of Public Law 167 of July 1955.

Materials under claim are generally common varieties.

Usually in conjunction with recreation, there is considerable interest in agates, thunder-eggs and limb-casts in this Master Unit. Areas which have these stones in abundance are located as mining claims, either by civic organizations to keep them as "Free Public Diggings" or by commercial operators. These claims are not in accord with the intent of the mining laws and legislation is needed to insure that these potentially valuable recreation areas are not closed to the public. These digging areas look like a freshly spaded garden, a unique sight in the middle of a sagebrush and juniper zone.

6. Water

The National Land Reserve is a significant factor in the water economy of the Central Oregon Master Unit. As discussed under general economic factors, irrigation water is basic to the agricultural economy both in and downstream from the Master Unit.

The largest sources of surface water on the Master Unit are the National Forest Lands. The streams after leaving the forests pass through BLM lands where the quality of the water must be maintained.

Locally throughout the Master Unit and particularly in the Southeast portion, BLM lands are the source of surface water. In addition to providing downstream supplies, these streams are very important in providing water for the hay base for local grazing licensees.

7. Recreation and Wildlife

Except for recreation activities which require mountains, the National Land Reserve in this Master Unit supports its share of the large influx of recreationists to the area. Many areas are presently inaccessible because of either lack of roads or locked gates and even the most primitive campsite or picnic facilities are completely lacking. Many of the better recreation sites are under single purpose withdrawals and at present it is difficult to encourage local groups to develop these sites for public use. It is becoming increasingly apparent such sites should be developed by the BLM.

To open up the areas now inaccessible, a service access road program and exchange program are now being considered. About two hundred miles of new service roads are needed now.

Big game includes deer, elk and antelope and these animals in addition to considerable summer use, winter largely on the National Land Reserve. There is considerable competition for forage with range livestock; but, as yet the wildlife has made few serious depredations on agricultural crops. Upland birds range to a large extent on agricultural lands; however, after the first few days of the hunting season many of the birds are "hiding out" on the National Land Reserve.

Public lands adjacent to lakes and reservoirs need to be developed as boat landings to facilitate water sports and lake fishing. Such developments, of course, need facilities for camping and picnicking.

Recreation, at present, is an intrusive use being the last to develop in the Master Unit. The usual problems have developed; but, these will be worked out largely by the passage of time and development of roads and facilities.

Commercial Industrial and Urban Use

The most significant demand on National Land Reserve for site use is in the LaPine Area where there are 20 pending small tract applications. Without proper local planning controls these developments would be added to the rural slum which exists in the area now. Accordingly, the LaPine applications should be rejected or held in abeyance until the BLM in cooperation with the Deschutes County planning commission can provide better standards of house construction and the County has opportunity to initiate community services.

There is some Public Domain within and near the city limits of Redmond. The number of Public Sale Applications in the area attests to its value. These lands should definitely be included in the exchange with Deschutes County previously mentioned.

There is an application for a sewage lagoon near Bend to treat the waste from the proposed pulp mill. The high public use potential in the area makes it necessary to closely analyze this use of the land with particular emphasis on alternate methods of effluent treatment.

There has been some promotional activity of desert home site in the Master Unit to out of state unknowledgeable buyers. As yet this has not affected the National Land Reserve; but it may in the future.

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General Conclusions

1. The National Land Reserve in the Central Oregon Master Unit is highly significant. It is integral to and supports much of the Master Unit's recreation and range livestock industries.

2. Hunting in the Master Unit is highly productive and National Land Reserve provides much critically needed winter range for the game in the area.

3. Recreation facilities on National Land Reserve are grossly inadequate. Many sites need to be developed and many miles of service road need to be constructed to accommodate the rapidly increasing demand.

4. National Forest Lands are most significant to the forest economy; but, BLM management of its forested lands is locally important in supplying needed stumpage to maintain existing installed sawmill capacity. Private forest management generally is absent with a cut out and get out policy on all but the largest holdings.

5. National Land Reserve Watersheds are vitally important both for the initial production of water run-off and for the maintenance of water quality. Although most of the water production is used in the area, there is a significant and growing demand for downstream use for irrigation and hydroelectric power.

6. There is a continuing need for intensive balanced use management on the National Land Reserve in this Master Unit. Two programs are essential for this management: (1) Tenure on these lands must be stabilized in federal jurisdiction to make possible the significant capital investments which are needed, and (2) this management must be facilitated by an exchange program, first with Deschutes County, to satisfy its needs and those of the BLM. Following this, possible private exchanges should be carefully studied.

7. There is a significant but localized demand for commercial, industrial and urban use of public land. This demand can best be satisfied through an exchange with Deschutes County. Applications for small tracts should be rejected or suspended until appropriate county zoning regulations are developed.

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BAKER

BAKER

Master Unit Classification Study
Baker Management Area
Baker Oregon Master Unit

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Initial Analysis

The Baker Master Unit is bounded on the East by the Snake River, the North by the Wallowa Mountains, the West by the Blue and Elkhorn Mountains and on the South by the divide between the Burnt River and the Malheur River. The Unit is a basin surrounded on three sides by mountains with two rivers, the Burnt and the Powder, draining toward the East.

There are 3 major lakes, all artificial. They are Unity Reservoir, Thief Valley Reservoir and the pool from Brownlee Dam on the Snake River.

The Master Unit, except for the valley bottoms, is rough, steep and mountainous. Elevations range from 2,000 to 10,000 feet with the average of about 5,000.

Social Factors

The 1960 population of this Master Unit comprises 17,000 people, 58% of which are classified as urban in character.

Baker with 10,000 people, is the largest city with Richland, Unity, Huntington, Halfway and Haines important towns. The population has increased slightly during the last 10 years due to the hydroelectric construction projects on the Snake River. There may be some reduction in number of people soon, as one of the larger pine lumber remanufacturing mills has just closed down. There has been little internal population shift since 1950.

There are few migrant workers in the central valley. Harvest labor is usually provided by high school students on summer vacation.

Until recently, unemployment was not a problem due to dam construction projects. However, now the projects are completed and along with the mill closing, a surplus of labor may develop. Seasonal unemployment, particularly in the logging industry, is high as heavy snow and unsurfaced roads preclude woods operations.

Economic Factors

The location and semi-isolation of this Master Unit gives it a three-way orientation; namely, to Western Oregon, to Idaho and to Washington.

1. Agriculture

Agriculture is diversified. Range livestock, dairying, fruit orchards, row crops (potatoes and corn), hay and dry land grain are important. The summer season in the agricultural areas is short and hot, consequently frost-resistant or fast-maturing species are grown.

2. Forestry

190 There are nine medium to large and three small sawmills in this Master Unit. This area has enjoyed an active forest products industry for a long time. Consequently, the mills are older and generally need upkeep and improvement. These mills produce lumber which is sent out of the area for remanufacture and use.

Mill capacity is greater than the forest producing capacity. However, the mills operate at less than capacity to keep from shutting down permanently. These cut about 90 million board feet per year. Private land is practically all cut out; the usual practice is to clear-cut in this Master Unit. The highest order of harvest is a selective cut where only the high risk trees are removed at frequent intervals; federal lands are being managed under this cutting policy.

There is little competition for federal stumpage. The installed mill capacity would indicate a strong competitive market.

3. Range Livestock

The range livestock industry is in the process of a dual change. Sheep are declining in importance, and cattle are increasing. Also, range operations are becoming more integrated with agricultural use for two reasons: One, the hay-producing capacity is much greater than the range capacity; and two, the small operators which predominate are breeding higher quality animals which are more profitable on the more intensively managed pasture lands. The many operators have found it to be more profitable to keep their animals on irrigated pastures and hay during the year rather than turn them out on the range. Because of the shortage of forage, most producers sell weaner calves rather than feeder animals. Calves are generally shipped to California or Idaho for finishing.

However, the range lands are generally overobligated and are overused. This has caused a trend toward consolidation of ranches with many Californians paying higher than average prices for them. The attraction to these ranchers may be the recreation and financial opportunities rather than the ranching operations.

4. Recreation

The many recreational opportunities of this Master Unit make it very popular for use by both local and out-of-area residents, particularly from the Boise, Idaho valley. The year round recreational opportunities are used heavily.

There are nine medium to large and three small sawmills in this Master Unit. This area has enjoyed an active forest products industry for a long time. Consequently, the mills are older and generally need upkeep and improvement. These mills produce lumber which is sent out of the area for remanufacture and use.

Mill capacity is greater than the forest producing capacity. However, the mills operate at less than capacity to keep from shutting down permanently. These cut about 25 million board feet per year. Private land is practically all cut out. The usual practice is to clear-cut in this Master Unit. The highest order of harvest is a selective cut where only the high risk trees are removed at frequent intervals; federal lands are being managed under this cutting policy.

There is little competition for federal stumpage. The installed mill capacity would indicate a strong competitive market.

The range livestock industry is in the process of a real change. Sheep are declining in importance, and cattle are increasing. Also, range operations are becoming more integrated with agricultural use for two reasons: One, the hay-producing capacity is much greater than the range capacity; and two, the small operators which predominate are breeding higher quality animals which are more profitable on the more intensively managed pasture lands. The many operators have found it to be more profitable to keep their animals on irrigated pastures and hay during the year rather than turn them out on the range. Because of the shortage of forage, most producers sell weaner calves rather than feeder animals. Calves are generally shipped to California or Idaho for finishing.

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The many recreational opportunities of this Master Unit make it very popular for use by both local and out-of-area residents, particularly from the Boise, Idaho valley. The year round recreational opportunities are used heavily.

Hunting and fishing are probably the most popular forms of recreation and the Lower Powder River Sportsman's Club is the largest and most active group of its type in the state.

191 Camping, water sports, winter sports, tourism, rockhounding and scenery enjoyment are also popular. Scenery enjoyment is supplemented by the ghost mining towns in the area which have historical significance.

5. Minerals

The Baker Master Unit is the most active mining area in Oregon, although mining is much reduced from its past importance. Mining was the basic economic activity of the first settlers and remained as such until the turn of the century. An example of investment in mining is the Eldorado Ditch, hand-dug by Chinese Coolies for 81 miles.

Gold and silver were the first minerals worked followed by copper in sufficient quantities to justify construction of 60 miles of railroad spur to haul out ore. Metallic mining is now reduced to small operations by old timers who use it to supplement other income.

There are three cement and lime plants in the area using local deposits of limestone. These are the principal mineral activity now.

Dredging has destroyed some excellent farming areas for any future use except as a source for sand and gravel.

Secondary Industrial Development

Principal industry is steel fabrication. Powder River cattleguards and cattle chutes are well-known over the west. Grain milling is important locally.

Transportation Systems

U. S. Highway 30 running from the northwest to the southeast of the Master Unit and soon to be improved to interstate freeway standards is the principal highway route. State Highways radiating from Baker include routes 7, 86, 203 and 220. County dirt and gravel roads tie these roads together quite well.

The mainline of the Union Pacific Railroad serves the area; but the spur lines which ran to Whitney and Robinette have been discontinued. Airline service is also available.

Energy Systems

Energy is provided by a private utility system and an interstate gas transmission line.

Water

Water is used primarily for irrigation. The mountain areas surrounding this Master Unit supply good year round supplies. There is a recognized need for storage of spring runoff to insure adequate irrigation water in late summer. At present almost all water is obligated except in the Lower Powder River Valley. The two major Bureau of Reclamation reservoirs, Unity and Thief Valley, are supplemented by many smaller private projects.

Ground water is of local importance primarily for livestock and domestic use. Precipitation ranges from 7 to 50 inches and averages 12 inches. Most of it comes during the winter as snow.

Federal Public Works Projects

There are two storage dam projects proposed for this Master Unit. Nason Dam on the Powder River near Sumpter and the Dark Canyon Dam on the Burnt River.

Military activity is limited to a radar station.

Labor Unions and Cooperatives

Labor unions in the lumber mills and on the railroad are strong. Agricultural cooperatives are not significant.

Lands

The National Land Reserve in this Master Unit totals 347,000 acres, well distributed over the entire area. It is generally at lower elevation than the Whitman-Wallowa National Forest, the other major federal jurisdiction. The National Forest has acquired considerable acreages in the Dooley Mountain area under the Weeks Act and it is intermingled with National Land Reserve. National Land Reserve is rough, steep range or commercial forest land located usually on the ridges and mountains between the valleys. It is intermixed with private land.

There is considerable Reclamation and Powersite Withdrawn Land adjacent to the Snake and Powder Rivers. With construction of the Brownlee and Oxbow Dams on the Snake, occupancy trespass may become a serious problem unless safeguards are taken to assure proper administration of such withdrawn lands.

There is considerable State land. It is usually intermingled with National Land Reserve and an exchange program is indicated to consolidate both ownerships. The trend in private land ownership is toward consolidation of both range and forest land holdings.

Use and Demand for National Land Reserve

1. Agriculture

Unless a large scale pumping irrigation project is introduced, there will be little demand on the National Land Reserve for agricultural land. However, agricultural trespass on corners and strips adjacent to the private lands is a problem.

2. Range Livestock

The grazing use of National Land Reserve is greater than optimum; consequently, the range is in fair condition and much of it is still deteriorating. It does have a high potential for recovery and production.

Grazing use is during a 5½ to 7 month summer season and this is integral to the operations of 238 licensees who have privileges on the federal range.

Poisonous and noxious weeds infest the area. Cheatgrass, whitetop and medusa head rye cover large areas and are spreading. Also, there is a localized infestation of Mediterranean sage and there are some cattle losses from larkspur. Because of whitetop, Baker County hay has been embargoed by adjoining counties increasing the range problem, as the hay-producing capacity is greater than the range-producing capacity.

3. Forestry

The Bureau of Land Management forestry program is very important to the economy. The five million board foot allowable cut based on an extensive inventory pending completion of an intensive inventory, amounts to one fifteenth of the allowable cut in the county.

Access to the Bureau of Land Management lands is difficult, as easements across private holdings are becoming more difficult to secure. Many of the timbered areas need to be initially developed by roads built with appropriated funds.

Protection of the National Land Reserve is a problem. A small amount is under contract with the Forest Service and the remainder under force account protection. There is no rural fire organization in the county and the Bureau of Land Management is protecting a total of 900,000 acres of private and state land in this high hazard area with no reimbursement.

4. Minerals

194 The material covered in the general economic factors on minerals is applicable here with some additional problems on balanced use management.

The district has been initially covered by examinations under Public Law 167; however, the areas where claims were found need additional examination and action.

Legally located but unpatentable mining claims interfere with the timber sale program. Location holes present a problem as they create deadfalls trapping cattle and humans, and erosion is accentuated by hydraulic mining.

5. Water

Bureau of Land Management watersheds are the source of much of the water used on irrigated lands downstream. In addition, the vast amount of water flowing from the National Forest has its quality maintained while passing through the National Land Reserve.

6. Recreation and Wildlife

As with the watersheds, National Land Reserve is an integral part of the recreational aspect of this Master Unit. Use is, to date, heavy and is limited to an extensive type because no intensive use facilities have been developed.

Hunting for deer, elk and upland birds is very productive and hunter success is excellent. Bureau of Land Management lands provide much of the winter game range. There are some localized areas of game overpopulation. This points up the need for more service roads into these areas so hunters can harvest the animals. This use tends to compete with livestock grazing.

The area adjacent to the Brownlee and Oxbow pools on the Snake River needs to be developed for public use. The same conditions as existed on the Lower Colorado are present here and an equally serious situation could develop if the Bureau of Land Management does not soon initiate management controls. Occupancy trespass could mushroom from the trailer camps which are there now.

Commercial, Industrial and Urban Use

There is little demand for such uses on National Land Reserve at present. However, if an industry is attracted to the area to replace the closed lumber mill, a strong demand could develop.

General Conclusions

1. There is a high present demand for recreational use of Bureau of Land Management land. This demand in the future will be much greater and the need for service roads and site facilities is great.

2. Along the Snake River, an occupancy trespass problem may develop unless Bureau of Land Management develops needed facilities.

3. National Land Reserve watersheds are very significant to the Master Unit both for producing water and maintaining its quality.

4. In this highly mineralized area, now inactive, mining claims present serious problems to balanced-use management.

5. The range resource of the National Land Reserve is being overused and much of it is deteriorating. This situation should be rectified by reduced use and substantial capital investment. These range lands are integral to the private ranch operations.

6. Continued high order forest management on National Land Reserve is necessary, as it provides a significant amount of timber harvested in the area. Private timber ; is no longer of significance.

7. Fire protection of National Land Reserve is a problem. This is compounded by the lack of a local organization to protect private lands.

8. There is a need for a large exchange program to consolidate National Land Reserve holdings.

9. At present there is no forseeable demand for commercial, industrial or urban use of the National Land Reserve.

10. There is a continuing need for balanced use resource management on almost all of the National Land Reserve in this Master Unit.

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WALLOWA

Master Unit Classification
Baker Management Area
Wallowa Oregon Master Unit

Initial Analysis

Physiographic Features

The Master Unit is located in the extreme northeastern corner of Oregon and includes a small portion of southeast Washington. It is bounded by the Snake River running through Hell's Canyon on the east, the Wallowa Mountains on the south, and the Blue Mountains on the west and north. It includes Union and Wallowa Counties, Oregon and portions of Asotin and Garfield Counties, Washington.

The south and west portions of the Master Unit are characterized by large interior valleys separated by high steep granite mountains. The north and east portions are a high plateau bisected by deep steep canyons. Prominent rivers in addition to the Snake are the Grande Ronde, Imnaha, Wallowa, Minan and Lostine. There are many alpine lakes, the largest being Wallowa Lake.

Elevations range from 600 to 10,000 feet and average about 4,000.

Social Factors

Population of this Master Unit is 25,000 and is about one-third urban. The population is decreasing slowly, with a shift from the rural areas to the cities and towns.

LaGrande is the largest city with 9,000 people. Other important communities are Enterprise, Wallowa, Union, Cove and Elgin.

Much of the population are descendents of the pioneers who settled the area. There are few migrant workers and harvest labor is supplemented by high school and college students.

Seasonal unemployment mainly results from adverse weather for logging operations.

Economic Factors

The close proximity of Washington and Idaho has considerable effect on the Master Unit's economy, with considerable trade going to Lewiston, Idaho, and Walla Walla, Washington.

Agriculture, including range livestock, forest products and recreation are the three major occupations in this Master Unit. The range livestock portion of agriculture is tied quite closely with recreation, as many small ranchers supplement their income by acting as packers and guides for recreationists, particularly hunters who use the area.

1. Agriculture

North of the Master Unit is the Palouse grain region of Washington. This type of farming extends south into this area and dry land grain farming is probably the most important agricultural crop. There is considerable hay and grass seed produced in combination with small scale dairying and fruit orchards.

The climate has many extremes from cold long winters to a very hot 2½ month summer period; however, killing frosts occur during every month of the year. The altitudinal differences give this area a complete ecological range and make it very interesting to botanists.

The small amount of arable land adjacent to the Snake River enjoys a 6 month mild growing season.

Soils are closely related to elevation. Valley soils are deep and fertile, the foothills are thin and erosive and the mountains are generally rocky, erosive and steep.

2. Forest Products

There are four medium to large size mills and four small sawmills. At the present time, mill capacity is about equal to growing capacity. There is a good competitive interest for Federal timber sales. The trend is toward larger forest product corporations purchasing and consolidating smaller sawmill ownerships. Except for the larger ownerships, most of the private timber in this area has been heavily cut; but there is considerable stand improvement activity on the second growth lands.

The wide ecological range yields many tree species, but ponderosa pine is the most important. The timber is practically all sawed into lumber and shipped elsewhere for remanufacture and use.

3. Range Livestock

Cow-calf operations are typical of the range livestock industry. The small operations are generally not integrated with agriculture and operators supplement their income by packing for hunters. The small operations have caused operators to produce high quality animals. There are a number of registered cattle growers in the Master Unit.

The fine recreation opportunities have attracted many absentee owners who buy land more for hunting camps than for ranch operations.

4. Recreation and Wildlife

This Master Unit is used heavily for recreation. Use is mostly in the summer and fall because of the lack of winter sport facilities. Use of recreational resources is mostly by people who have permanent residences in other states or areas.

The three heaviest recreational uses are fishing, hunting and scenery. The latter two support the wrangling and packing operations, one of the principal economic occupations of the area.

For the facilities available the demand for recreation is high and as more people discover this area, the demand will grow even higher.

The area is very productive for elk, deer and upland game. Wild turkeys have been introduced recently to supplement the upland game population.

The cold streams in the area rise high in the high mountains, and maintain the same level year round. These conditions make them some of the most productive in the state. The streams are also important spawning grounds for steelhead and salmon.

5. Minerals

This area has had considerable gold mining in the past; however, there is very little now. There are several low grade chromite and wolframite deposits. No known leasable minerals are present. Because of the low population and isolated nature of the area, there is little activity in common varieties. The granite of the Wallowa Mountains contains considerable pyrite and mica which provides tourists with specimens of fool's gold.

Secondary Industrial Development

There are no industrial operations in this Master Unit. However, a wood board plant has been proposed.

Transportation Systems

Following the Old Oregon Trail, U.S. Highway 30, soon to be an interstate freeway, serves the southwestern portion of the Master Unit. State Highways 3, 82, 203, 204 and 237 are paved and generally serve the valley areas. The generally slow roads to the interior have helped keep it isolated and undeveloped.

The mainline of the Union Pacific Railroad parallels U.S. Highway 30 with a spur running to Enterprise.

Energy Systems

Electric power is supplied by a private utility. The controversy on the hydroelectric development of the middle reaches of the Snake River is still going on with four dam projects being studied either in the Master Unit or immediately downstream. An additional dam is proposed for the Grande Ronde River.

A high pressure gas transmission line serves the LaGrande area.

Water

This area is well supplied with water for irrigation. The supply available is presently greater than can be used on the limited amount of tillable land.

Other than the amount used for irrigation, water is primarily valuable for downstream hydroelectric generation and fish propagation.

Annual precipitation ranges from 12 to 60 inches with the average about 20 inches.

PUBLIC WORKS PROJECTS

Other than the hydroelectric dams proposed for the Snake and Grande Ronde Rivers, there are no Federal public works projects in this area.

Labor Unions and Cooperatives

Railroad labor unions are strong. Organizing lumber mills has met with only limited success.

There are few farm cooperatives; however, the Grange is strong.

Local Planning and Control Groups

None of the counties in the Master Unit have county-wide planning or zoning ordinances.

Public Institutions

Eastern Oregon College of Education is located at LaGrande. This college is the primary institute of higher education in eastern Oregon and attracts many students.

The Land

Including the lands along the Grande Ronde River in Washington, there are about 35,000 acres of National Land Reserve in this Master Unit. This land is in two general areas: along the rivers where much of it is under Reclamation or Powersite Withdrawal and adjacent to the National Forest boundaries. The lands are generally forested by Ponderosa pine and support grazing use.

There are two National Forests: the Whitman-Wallowa and the Umatilla which represent the largest concentration of Federal land holdings.

There are a few Coordination Act Withdrawals on the Grande Ronde River for fish and wildlife purposes. In Washington, the state has been encouraged by BLM to apply for the lands along this river under the Recreation and Public Purposes act. The area is included in a management project and any such application should be carefully analyzed in light of continued balanced use management by the Bureau of Land Management.

There is a small amount of state and county land scattered throughout the Master Unit. County land is generally sold as soon as it is acquired.

The trend of private land ownership is toward consolidation and enlargement of holdings. Many of the ownerships are too small to be the sole support of the owner; but are an excellent base for horse wrangling and packing operations.

1. Agriculture

There is little demand for agricultural use of National Land Reserve. It is generally located where it is not subject to agricultural trespass.

2. Range Livestock

The National Land Reserve is mostly under Section 15 lease for grazing purposes. It is generally not integral to ranch operations because of its small acreage; but because of the large number of small cattle operations, it is in high demand to enable the operator to earn a small income. Use is during the summer season and the range is generally in good condition.

3. Forestry

Timber harvested from the National Land Reserve is needed to supplement the total cut in this Master Unit, and amounts to about 5% of the volume produced. These small sales are very attractive to the operators to fill in the gaps between large Forest Service sales. It may be possible to winter log Bureau of Land Management sales on the lower elevations tending to alleviate seasonal unemployment. Timber offerings attract good competition.

National Land Reserve timber is a Ponderosa pine - Douglas-fir mixture adjacent to National Forests or in steep, deep canyons. It is difficult to log such lands without creating serious erosion problems. Many of the streams in these canyons are important steelhead spawning grounds and unless extreme care is used in logging, these spawning beds are silted. High quality forest management practiced by the Bureau of Land Management appears the best way to insure these two valuable resources will be maintained at their highest productivity.

The present program of sanitation and salvage cutting is based on an extensive inventory with an intensive forest inventory to be completed in the near future.

Access to timber lands is difficult. First, because of hard road building shows, and, second, the need to deal with many small land holdings.

Protection of the National Land Reserve is by contract to the Forest Service and the Northeastern Oregon District of the State Forestry Department.

4. Minerals

The mineral activity on National Land Reserve is the same as described under general economic factors. P.L. 167 activity has been started on this area, but not yet completed. Other than access to timber sales, mining activity does not conflict with other uses.

5. Water

Most of the water rises on the National Forests and then flows through private land and National Land Reserve. The major contribution of the National Land Reserve to the Water Resource in addition to the high order logging practices mentioned under Forestry, is to maintain the quality of water and to provide access to streams for fishermen.

6. Recreation and Wildlife

The two major contributions of BLM lands to the recreation resource are winter range for big game and access to the rivers for fishing and water sports. There has been little emphasis on public recreation in this area to date. Many of the facilities and access are provided by the commercial outfitters.

There are many excellent National Land Reserve sites for intensive development and this should be completed soon before the facilities are overburdened by the more and more people who are discovering the area and who will pour in when U.S. Highway 30 is a freeway.

As more and more outside people use the area for recreation there is a potential serious conflict between the commercial outfits which are in the area now and the people who have the right to use it free. This conflict can be reduced if facilities for free public use are provided by the Bureau of Land Management.

Commercial, Industrial and Urban Use

There is little present demand for site use of the National Land Reserve. However, as the area becomes better known pressures may develop for homesite small tracts.

General Conclusions

1. The National Land Reserve makes important contributions toward maintaining water quality in this Master Unit.
2. The National Land Reserve is vøry important in providing access to fishing streams and provides the winter game range. As such it is vital to the recreation resource of the area. A number of sites should be developed for recreational use.
3. National Forests provide the bulk of the timber cut in this Master Unit; however, the small BLM sales which can be logged, particularly in the winter, attract much competitive interest and are significant to the local economy.
4. The location of National Land Reserve forests in this Master Unit requires an extremely high order of management to protect the spawning beds of valuable anadromous fish.
5. Bureau of Land Management lands, although in heavy demand, are a small but important factor in the range economy of the Master Unit.
6. Mining is not important in this Master Unit; howevør, mining claims provide serious problems of access and surface disturbance in conflict with balanced use surface management.
7. There is little present demand on the National Land Reserve for commercial, industrial or urban use. In the future there may be a demand for homesites.
8. The National Land Reserve although scattered and of small acreage, is highly significant to this Master Unit because of its strategic location. Because of this, most of these should be keep in balanced use under public management primarily for their recreation, wildlife watershed and forestry values.

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Dept. of Commerce - Census Data

UMATILLA

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Master Unit Classification Study
Baker Management Area
Umatilla Oregon Master Unit

Initial Analysis

Physiographic Features

The Umatilla Master Unit is located in the northeastern portion of Oregon where the Columbia River becomes the boundary between Washington and Oregon. Other than the Columbia River, which forms a portion of the north boundary, there is a lack of prominent land forms to describe the area. It is bounded generally on the east by the Blue and Elkhorn Mountains, and on the south and west by the divide between the John Day and the Umatilla Rivers and Willow Creek. It includes all of Umatilla, Morrow, and the northeastern one-third of Gilliam Counties.

The Master Unit is generally a rolling plateau dissected by deep canyons rising from the Columbia River on the north and ending in high mountains on the south and east.

Major watercourses are the Umatilla and Walla Walla Rivers, and Birch and Willow Creeks.

There are no large natural lakes and, other than the pools formed by McNary and John Day Dams on the Columbia, Mckay and Cold Springs Reservoirs are most important.

Social Factors

The population of this Master Unit is about 50,000 people with about half living in towns and cities. Pendleton is the largest city with 14,000 persons. Other important cities and towns include Milton-Freewater, Weston, Hermiston, Heppner, Umatilla, Arlington, and Pilot Rock. The population has increased slightly but not significantly over the last 10 years. A significant trend has been the urbanization of rural population.

Seasonal unemployment in this area is high due to the emphasis on construction and agriculture which limits labor during winter months. There is considerable influx of migrant labor during the pea and grain harvest season.

Indians from the Umatilla Reservation constitute the major individual ethnic group.

The State of Washington has considerable effect on the economy of this Master Unit. Walla Walla is the largest city within a radius of 150 miles and attracts considerable trade.

Economic Factors

206 1. Agriculture

Agricultural crops are a very important income producing occupation in this Master Unit. Dry land grain and pea farming are the most important, followed by diversified irrigated farming where water can be put on the land. The lower elevations enjoy a long, hot, frost-free growing season. Soils are deep and fertile, but the dry farming region is subject to severe erosive damage from wind and water unless tilled under the most careful practices.

2. Forest Products

There are two medium size and four small sawmills located in this Master Unit. The forest producing capacity is less than the mill capacity and, as a consequence, small private holdings have been practically all logged out. The two medium size ownerships have been managed under selective cutting practices. This produces the highest return over a long period of time, but one of them has been recently sold and its cutting policy is not yet apparent. Mills are dependent on public and Indian stumpage for continued operations.

Timber manufacture includes primary and limited secondary processing with one plant achieving maximum utilization by converting sawmill waste into pulp chips.

3. Range

The range livestock industry is primarily cattle, but there are significant numbers of sheep. Ranch operations tend to be combinations of dry land grain farming with livestock grazing on the harvested grain fields and areas too steep for cultivation.

Operations are working ranches rather than absentee owned and are generally large well paying economic units.

4. Recreation and Wildlife

Recreational use of this area is primarily local. Many tourists pass through on highways but frequently do not linger except during the Pendleton Roundup.

Good highways make the area very accessible; but there has been little development or effort to attract recreationists although there is an influx of people during the fall hunting season.

Localized demand for good outdoor recreation areas is high. It
207 will increase even more as the population becomes more urban in character.

If the proposed Space Age missile site at Boardman is built, this demand will soar beyond developed facilities which are now available.

5. Minerals

Mining in this area is generally limited to common varieties. There may be some potential for metallic ores or leasable minerals; to date there has been little activity along this line. On some areas rockhounds find stones which can be worked into ornamental jewelry.

Secondary Industrial Development

The industry of this area is resource based. Grain elevators are important along with processing, both canning and freezing, of local agricultural products. Wool processing and leather goods (saddles) are industries located here.

The proposed Boardman Industrial Park for missile manufacture may bring new industry which is not so dependent on local resources.

Transportation Systems

The Umatilla Master Unit is served by U. S. Highways 30, 395, and 730, with 30 soon to be an interstate freeway and 395 being considered for similar improvement. Oregon highways 11, 74, 204, and 207 tie the U. S. routes together. Paved county roads serve the more densely populated agricultural areas, but county roads are scarce and poor in the more remote regions.

The large amount of grain produced has encouraged railroad construction. Every major town and city has access to railroads. The main line of the Union Pacific goes through the Master Unit and spur lines of the Northern Pacific come into the eastern portion at Pendleton.

When the John Day Dam is completed, slack water navigation will be possible to the lower limits of barge navigation on the Columbia. Already several companies have built grain elevators on the river bank to take advantage of this cheap form of transportation.

Energy Systems

This Master Unit is in the middle of the Bonneville Power Administration System and power lines crisscross the area. Additional low cost firm power resulting from Canadian upstream storage should attract manufacturing plants.

The Master Unit is also served by a high pressure natural gas transmission line and a similar pipeline carrying oil.

Water

Water in this Master Unit is a paradox. The Columbia during the irrigation season has an unused surplus, while the minor drainages flowing into it are completely appropriated. The Walla Walla River near Milton-Freewater has been the subject of Supreme Court litigation to determine the validity of downstream rights.

Ground water supplies are not well known now. However, the John Day Dam will probably build up the aquifer adjacent to its pool and may make additional ground water irrigation possible. Such a situation would subject more acreages in the lower productive areas to irrigated cultivation.

Precipitation ranges from 8 to 32 inches and averages about 15 inches. This comes in the fall, winter, and spring and, except for the mountains, is mostly rain. Cloud seeding has been tried, but it did not prove successful.

Federal Public Works Projects

In addition to the dams on the Columbia, the Umatilla Ordnance Depot and the Boardman Bombing and Gunnery Range contribute to the local economy.

Labor Unions and Farm Cooperatives

Labor unions in this area are strong. Construction trades and the railroads are well organized. Pendleton is branch headquarters of the Western Conference of Teamsters.

Agricultural cooperatives are strong also. The Pendleton Grain Growers Cooperative exerts considerable influence on grain marketing.

Local Planning and Control Groups

Local planning groups are overshadowed by the State Development Board which is now in the process of developing the Space Age Industrial Park at Boardman. The many published inter-agency reports on development of the Columbia River have a significant planning effect on the area.

Federal Assistance Groups

This area being a heavy grain producer receives considerable help from the various branches of the Department of Agriculture which is attempting to curb wheat surplus.

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Public Institutions

Other than the normal complement of schools and hospitals, Pendleton is the site of a State mental hospital. A State college has recently been proposed for Pendleton.

The Land

National Land Reserve in this Master Unit totals 85,000 acres. It is scattered throughout, but the heaviest concentration is near Boardman in the declassified Echo 0-7 grazing district. Much of this land has been selected by the state in the Boardman Industrial Park exchange.

The Umatilla National Forest, the Umatilla Indian Reservation and the Boardman Bombing Range are significant federal jurisdictions in this area. There has been consideration given to terminating the Umatilla Reservation.

There are some wildlife refuge lands along McKay and Cold Springs Reservoirs and some Coordination Act Lands on the Columbia.

Withdrawals of all types border the Columbia River.

Other than the land it is acquiring in the Boardman Area, there is very little state or county land in this Master Unit.

Private land predominates and can be characterized as large and good economic units. There is little absentee ownership and many of the farms and ranches are being operated by the second and third generation descendants of original settlers.

The National Land Reserve lands, except in the Boardman area, are generally scattered range lands and are the remnants of disposition under the agricultural land laws. BLM lands adjacent to the national forests support stands of commercial timber.

1. Agricultural

At present there is a high demand on the National Land Reserve for agricultural development. Many desert land entries have been filed and these may succeed if water can be developed cheaply; however, desert land entries in this area have had a history of failure because of the high development costs. Such agricultural development is usually for cereal crops, already in surplus supply.

2. Forestry

Forested portions of the National Land Reserve are mostly adjacent to National Forests. These lands at lower elevations provide excellent supplementary sources of timber for operators to harvest between large National Forest sales.

210 Much of this harvest can be done in the winter and, as such, does much to alleviate local unemployment.

BLM lands have been covered by an extensive inventory and will soon be intensively inventoried. Present cutting practices are sanitation and salvage on a selective marking basis. This permits the larger vigorous trees to put on added increment. Such practices contrasts with the cutting of most small private holdings, where only the bare minimum required by state law is left to reseed the area.

Access to these tracts is difficult, and unless extreme caution is used, road building and skidding operations create serious erosion hazards. Protection in this Master Unit, except for the Echo District, is by contract with the State and the Forest Service.

3. Grazing

Most of the National Land Reserve, although not generally a vital portion of any ranch operations, is under Section 15 lease. The portion along the Columbia River appears to have a high value as an industrial park.

4. Minerals

Mining is not active on the National Land Reserve. No work under PL-167 has been done and mining claims are usually for common varieties. There is minor use of the land by rockhounds.

5. Water

The principal area where the National Land Reserve has a significant effect on watersheds is along the North Fork of the John Day River in the southern portion of the Master Unit. In this area the BLM lands protect the quality of water flowing out of the national forest lands.

6. Recreation and Wildlife

At present, the National Land Reserve is significant to this resource aspect in two ways: it provides access to streams and other federal lands, and it furnishes much of the winter big game range in the North Fork of the John Day River.

To provide scarce winter game range in this area, the State Game Commission is buying private land for wildlife habitat. This points up the wildlife-grazing conflict which is present in this Master Unit.

211 Demand for recreation opportunities is medium in intensity, but with greater urbanization and improvement of U. S. Highway 395, it will grow much higher. Uses for fishing and hunting for deer, elk, and upland birds, the primary uses now, will expand.

Access to the better National Land Reserve recreation areas is difficult because of its scattered nature and the many locked gates. An extensive service road coupled with a site development program is needed in recreation areas.

The better recreation and wildlife habitat areas are forested BLM lands. Studies have shown high order forest management improves these resources.

Commercial, Industrial and Urban Use

The Boardman exchange with the State of Oregon is ample proof of the demands on National Land Reserve for a specialized industrial site. If this develops further, it probably will include most of the old Echo Grazing District. The population due to the missile site activity will multiply and put correspondingly greater pressures on public land. It does not appear advisable to dispose of any of the National Land Reserve in the northern portion of this Master Unit without first giving full consideration to the future values of the land, especially for site use.

There is some National Land Reserve within the City of Umatilla which should be transferred to private ownership.

General Conclusions

1. The dominating influence on the National Land Reserve in this Master Unit is the proposed Boardman Industrial complex.

2. There is an important need to assure continued public management and tenure on lands suitable for forest, recreation, and wildlife purposes.

3. With the expected increases of population, the demand for recreation will increase correspondingly. The BLM should provide roads and sites for this recreation.

4. The impact of Indian timber sales on the local economy may become significant in event the federal trusteeship of the Umatilla Reservation is terminated.

5. Compared to other federal agencies, timber production from National Land Reserve is minor; however, this timber is important as fillers between large Forest Service sales. In the event of Indian reservation termination, it will be an important buffer to tide local industry over the period when no sales are being made.

6. National Land Reserve is a small but important factor in the range economy of the Master Unit. Some of the lands which are integral parts of livestock operations may best be transferred to private ownership.

7. If ground water becomes economically available, some of National Land Reserve may be suitable for agriculture.

8. The Master Unit is strongly influenced by the adjacent state, good transportation systems, and public power. Land values will probably remain speculative for some time to come.

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Baker Chamber of Commerce Data

Dept. of Commerce - Census Data

BURNS

JOHN DAY

MASTER UNIT CLASSIFICATION
BURNS MANAGEMENT AREA
JOHN DAY MASTER UNIT

Initial Analysis

Physiographic Features

The John Day Master Unit is located in the upper reaches of the river by the same name. The river and creek valleys provide space for people to live and work between the mountains. The Master Unit is limited to and includes all of Grant County, except the portions in the south drained by the Silvies and Malheur Rivers.

The Master Unit is bounded on the west by the John Day River flowing through Picture Gorge and the divide between the South Fork of the John Day and Crooked Rivers; on the north by divide between the North Fork of the John Day and the Umatilla Rivers and Willow Creek; on the east by Elkhorn and Blue Mountains; and on the south by the divide between the John Day and the Silvies and Malheur drainages.

The Middle Fork of the John Day flows through the center of the Master Unit. There are no significant lakes, either natural or artificial.

The Master Unit can be characterized as steep, mountainous country, broken by rather wide creek and river valleys. The highest elevation is Strawberry Mountain at 9,000 feet. This slopes down to 2,500 feet at Kimberly. The average elevation is about 4,500 feet.

Social Factors

The population of 7,000 is concentrated in the valleys and is shown as rural by the 1960 census. Population has decreased about 7 per cent since 1950. Important towns and cities include John Day-Canyon City with 2,100 people, Mt. Vernon, Dayville, Long Creek, Prairie City, and Monument. The Master Unit has several gold mining ghost towns sitting near dredge waste beds including Granite, Susanville, Galena, and Austin.

There have been few internal shifts in population since the gold mining operations which were shut down over 20 years ago. The population is largely composed of descendants of the mining and sheep ranching pioneers.

Unemployment is seasonal and is heavy when logging operations are shut down by economic conditions, snow or mud. This area lives with the continued threat that another sawmill will be unable to secure stumpage and be forced to close down. Such action is generally followed by an exodus of unemployed sawmill workers.

Economic Factors

The decreasing population of this Master Unit is a symptom of the deline in available resources. Private forest lands have been overcut and will not be productive for a long time; gold dredging operations destroyed much of the agricultural land.

1. Agriculture

215 Agriculture is limited largely to irrigated hay in the valleys and dryland grain on the arable uplands. The growing season is quite long and hot, but subject to frosts throughout the year. This limits growing to hay or grain.

The exact percentage of the agricultural potential that has been destroyed by gold dredges is not known, but much of the more fertile soils close to the river have been reduced to rock-pile tailings.

Most agricultural holdings are small and are operated in combination with range livestock. However, by raising high quality livestock and by efficient operations, the economic conditions of the ranches have been generally sound.

2. Forest Products

There are six permanent sawmills and one veneer plant in this Master Unit. Mill capacity exceeds growing capacity and the number of mills is steadily decreasing. This demand for timber has resulted in heavy clearcutting of private forest lands, except for one larger operation in the northern part of the Master Unit.

The mills cut lumber and core veneer for shipment, use, and remanufacture outside the area. There are no proposed plants for secondary manufacture of timber within the Master Unit.

3. Range Livestock

The range livestock industry is over 90 per cent cattle. It is dependent upon hay produced in the valleys for winter feed. A large part of the range is in poor condition due to past overgrazing by sheep and continued pressure of the small operations to attempt to attain economic size. There is a critical shortage of grazing land, particularly spring range.

There is a heavy turnover in ranch ownership. This picturesque area attracts out-of-area people who are readily sold on its attractions. The economic situation is not as rosy as first presumed and the cycle buy and sell resumes. Such a tenure situation is extremely hard on the range resources.

4. Recreation and Wildlife

216 Recreational use by out-of-area residents is heaviest during the deer and elk hunting seasons. The area has the highest hunter success rate for deer in the state. There is considerable year-round tourist traffic through the area, but the lack of sufficient facilities does not encourage them to stay.

Local use, in addition to hunting, is for fishing, camping, and scenery, but facilities for such use are limited. There is some interest by rockhounds, fossil hunters, and archeologists in the fossil beds along John Day on the west side of the Master Unit.

As U. S. Highways 26 and 395 are improved, there will be a greater influx of people into the Master Unit creating a heavy demand for recreation facilities. The local Chamber of Commerce is emphasizing recreation. This will accelerate discovery of the recreation opportunities in the area.

5. Minerals

This Master Unit was originally settled by gold miners who concentrated in the eastern side of the area. At present, mineral activity is reduced to one or two man mines.

Canyon City was probably the biggest strike, with 26 million dollars worth of gold taken from the creek gravel near it. There is still considerable interest in gold prospecting within this region.

There has been some exploration for oil and gas and some low grade chrome ore has been found in this Master Unit.

Secondary Industrial Development

There is no industry in the Master Unit now, none is planned, and little effort is being made to attract any. Emphasis of the local booster groups is oriented toward recreation and roads.

Transportation Systems

The Master Unit is served by U. S. Highways 26 and 395 which effectively quarter this area. County roads off these two highways are widely spaced and are largely supported by funds received from national forest timber sales.

In addition to lacking good connecting county and state roads, the area is not served by any railroad or airline. At one time, the Sumpter Valley railroad terminated at Bates; but the steel has been removed and all goods are now being shipped by truck. The closest available railhead is at Seneca in the Harney Master Unit.

Energy System

Except for Bates, which the REA lines reached in 1953, the area is supplied by private utility electricity. Electricity and liquid or solid fossil fuels are the only source of energy.

Water

The water resource is practically all surface water, and is used almost exlusively for irrigation. On the smaller streams it is almost all appropriated and used, but the larger streams have more than sufficient water to irrigate the agricultural land left following dredging.

Water rises mostly in the national forests and is high quality. Precipitation ranges for 12 to 60 inches, and averages about 18 inches.

Federal Public Works Projects

There is one presently proposed public works project. That is a storage dam on the John Day at Picture Gorge. The preponderance of fossils in the area may create a controversy equivalent to that of Echo Park on the Colorado River.

Labor Unions and Farmers Groups

Labor is organized in the sawmills, but the constant threat of a close-down keeps them from being effective.

Local Planning and Control Groups

The John Day Chamber of Commerce is promoting the recreation aspects and is urging improvement of the principal highways.

The county seat at Canyon City is the nucleus of county-wide planning.

Local Public Institutions

There are no State supported public institutions in this area.

The Lands

The approximately 100,000 acres of National Land Reserve in this Master Unit are concentrated on the west side adjacent to the National Forest Land. This is the largest concentration of Public Domain in the state managed under Section 15 of the Taylor Grazing Act. In addition, there is a considerable acreage included in stock driveway withdrawals.

The only other large Federal ownership is national forest with portions of four--the Ochoco, Malheur, Umatilla, and Whitman-Wallowa in this Master Unit.

There is some Federal land managed by the State Game Department under a Coordination Act Withdrawal. There is very little state or county owned land. Private holdings can be characterized as either being big absentee owned properties or small home owned. There are about six ownerships in the first category with the balance being in small holdings.

USE AND DEMAND FOR NATIONAL LAND RESERVES

There is very little agricultural potential on the National Land Reserve in the Master Unit. However, agricultural trespass on strips and corners, while not large acreage-wise, totals a significant number of occurrences.

1. Grazing

Even though National Land Reserve is scattered and managed under Section 15 lease, it forms a vital and significant portion of the operations of 175 lessees. These grazing leases are almost all for less than 1,280 acres and are necessary to the ranchers who hold them.

Range condition is mostly poor; but apparently has improved from the days when dust resulting from overgrazing on Rudio Mountain was 6 inches deep. The abundant rainfall gives this rangeland a great recovery potential under proper management and rehabilitation. Spring is the critical season with use generally limited to April, May, and June.

Cattle use the area almost exclusively; but overgrazing by sheep in the past was responsible for much damage to the forage resource. There is a serious conflict between cattle and big game in the winter deer range area.

Erosion from the overused range is not serious; but flash floods are a problem in this area as it is subject to summer thunderstorms.

Medusa head rye and juniper, indicative of range abuse, have taken over much of the federal range and are spreading.

2. Forestry

The forestry program on the National Land Reserve is significant to the economic life of this Master Unit. The small sales offered by BLM not only act as fillers between larger Forest Service sales, but in some cases have supplied timber to mills for periods when other Federal timber was unavailable.

BLM lands at the lower elevations can be logged in the winter time provided access is by hard-surfaced roads.

The timber is mostly ponderosa pine with mixtures of other coniferous species in some areas. 219

Pending completion of an intensive inventory, BLM offers about 6 million board feet of timber per year in this Master Unit, cutting only those trees which will die within 10 years or are overcrowded. Access to BLM timber sales is difficult as a result of the many small ownerships.

To date there has been very little conflict between the forestry program and mining.

Reproduction following logging is excellent in the Master Unit.

Protection is by contract with the State and the Forest Service.

Fire is not a great problem; however, slash on large acreages of recently cut over private land adjacent to National Land Reserve is a fire hazard and a breeding place for insects.

3. Mining

Mining activity is presently negligible as it affects the National Land Reserve but the administrative problem remains. About 10 per cent of the area has been examined under PL-167; these examinations have revealed that many claims have been fraudulently filed for recreation or home site purposes and a severe occupancy trespass problem has developed, particularly around Canyon City.

4. Water

The National Land Reserve is the source of water in some areas, but mostly it is a problem of maintaining water quality as it passes through heavily grazed areas.

5. Recreation and Wildlife

As more and more people come to know and use the area, as roads are improved and, particularly, if a county road is built from Dayville to Izee, the demand on the National Land Reserve will become very heavy. There are many potential camp sites which could be developed and access must be secured to federal lands.

At present the main contribution of the National Land Reserve is providing winter range for big game, a very scarce item in this area. Any outright disposal of such areas might be contrary to the public interest. This use conflicts with the already short supply of forage for range livestock and may become a greater problem.

Commercial, Industrial or Urban Use

There is no foreseeable demand on the National Land Reserve for site use in this Master Unit other than home sites.

General Conclusions

1. Wildlife use of National Land Reserve is vital to the continued high population of this resource. Winter range is in critical supply.

2. While there has been only limited recreation and service road development on the National Land Reserve, there is a need for such development before the demand becomes greater.

3. The area is dominated by the National Forests for all present timber production. However, the National Land Reserve contributes a significant amount to the local economy and has a high quality management program integrated with the balanced usage of other resources.

4. Except for home sites near Canyon City, there is little demand on the National Land Reserve for commercial, industrial or urban use.

5. The National Land Reserve is vital to ranch operations in this Master Unit. There is a conflict between wildlife and cattle for forage on overused grazing lands. Much needed are capital investments for range rehabilitation.

6. National Land Reserve is the source of some water, but more important, helps maintain the quality of water flowing from National Forest lands.

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HARNEY

MASTER UNIT CLASSIFICATION
BURNS MANAGEMENT UNIT
HARNEY MASTER UNIT

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Initial Analysis

Physiographic Features

The Harney Master Unit is the northernmost extreme of the Great Basin, the large area of internal drainage between the Rocky Mountains and the Cascades and Sierra Nevada, which has as its vortex the Great Salt Lake. This Master Unit is bounded on the north by the divide between the John Day and Silvies Rivers and the Malheur drainages; on the east by the Malheur River, and the Malheur County line; on the south by Harney and Malheur Lakes; and on the west by the divide between the Silvies River, the Crooked River and Wagontire Mountain.

The Master Unit includes the north half of Harney County, the Silvies and Malheur drainages in Grant County and small corners of Crook, Malheur and Lake Counties.

Internal physiographic features of significance, except for Harney and Malheur Lakes, are lacking. However, the Stinkingwater and Drinkwater passes on Highway 20 on the east side of the Master Unit add local color to the area.

Elevations range from 4,100 to 9,000 feet.

Social Factors

The population of this Master Unit is about 6,700 people, with 4,700 of them in a five-mile radius from Burns and Hines area. Other towns are Seneca and Drewsey. The population of the area has increased 10% since 1950; the increase appears to be in the younger age groups, as indicated by the school building program.

There have been no significant internal shifts in population, although the urban areas are increasing more than the rural.

Settlement of this area was 75 years ago, and most of the ranchers are descendants of these pioneers. The sawmill at Burns was established in 1928. Forest product workers are a group distinct from the ranchers. There is also a Piute Indian camp near Burns, adding another distinctive social group.

One of the two sawmills in the Master Unit closed several years ago, but the population loss from that was offset by installation of a military radar station.

Seasonal unemployment of woods workers is high. There are a few migrant hay hands present in the summer.

Economic Factors

1. Forest Product

The nearest commercial center is Boise, Idaho; consequently, some of the trade from this Master Unit goes there.

Harvesting timber and lumber manufacture overshadow all other income producing occupations. There is one large mill, the Hines Lumber Company, which is the only sawmill in the Master Unit. This mill owns very little timber land and its 100 million board feet annual cut is geared to the allowable cut of the local Forest Service working circle. It is an integrated mill and ships finished and remanufactured lumber for sale in its eastern wholesale lumber yards. Waste material is hogged and used for fuel. Surplus electricity from this waste is sold to the local power company.

2. Agriculture

Agricultural development in this area is limited by two factors: the high altitude makes frost a hazard and makes hay and grain the only sure crops, and second, the amount of water available for irrigation is limited. The soil is deep and fertile, but is subject to wind erosion when dry. There is considerable pressure to drain Harney and Malheur Lakes for agricultural use. As the lakes are a National Wildlife Refuge, this appears unlikely.

3. Range Livestock

Range livestock is practically all cattle with only three sheep operators left in this Master Unit. With some exceptions, many operations are small subsistence outfits which barely provide an income for their owner-operators. The ranches are integrated with hay from agriculture and are dependent on this hay for winter feed. Since most of the range in this Master Unit is National Land Reserve, range operations will be discussed more fully in that section.

4. Recreation and Wildlife

The Harney Master Unit is the gateway to northeastern Oregon from California. The demand for recreation facilities is high now, but if the many tourists who now pass through the area were to stop, existing facilities would be inadequate. During the summer season, the camp sites along the highways are used heavily by people who sleep out to save motel costs, or because of the lack of sufficient commercial facilities.

Hunting for big game, upland birds and waterfowl attracts most of the out of area recreationists who stay longer than a day. In addition, the Malheur Refuge recorded 10,000 non-hunting visitors during 1960.

Local use in addition to hunting is for fishing, with excellent fishing opportunities in Silver Creek, Malheur and Silvies and their tributaries.

Old Indian settlements along the lakes make this area very attractive to arrowhead and artifact hunters.

Rockhounding, scenery appreciation and some winter sports activity round out the outdooor recreation in this Master Unit.

5. Minerals

Mining has never been significant in this Master Unit. There have been minor developments of pumice for building blocks and some cinnabar mining, but these are very small operations. Exploratory drilling for oil and gas has been done, but no commercial development. There is a possibility of developing coal deposits near Drewsey.

Secondary Industrial Development

Other than forest products manufacture discussed above, there is no industry in this Master Unit.

Transportation Systems

U.S. Highways 20 and 395 and Oregon Highway 78 are the three most important routes tying this Master Unit to other areas. Oregon 205 now being paved connects Burns to the southern part of the Master Unit. In general, there is a lack of roads.

The Union Pacific Railroad spur from Ontario terminates at Burns. The Oregon and Northwestern runs up to Seneca. Products from the John Day Master Unit are trucked to Seneca for rail shipment.

Burns is a stop for scheduled commercial airlines.

Energy Systems

A Bonneville Power Administration line to Nevada runs through this Master Unit. This line should eventually supplement the power which is received from the local private sources.

Water

The Master Unit at present is dependent upon surface water for all irrigation. There is a lack of water to adequately irrigate all the crop lands and maintain the lake level in the wildlife refuge.

Irrigation is by flooding, and development of storage facilities and ditches are needed. Wells for irrigation are being drilled in increasing numbers, particularly during the last two years.

The Geological Survey has studied the groundwater potential of the valley and found it to be good. However, high power and land preparation costs have slowed development. What effect extensive groundwater pumping would have on the lakes is not known, but it might cause a significant draw-down.

Precipitation in the Harney Basin averages 10 inches annually and comes mostly in the winter.

Federal Public Works Projects

A radar station with a complement of 200 men is the only existing Federal project in this Master Unit. A water storage and flood control project on the Silvies River has been proposed by the Corps of Engineers.

Labor Unions and Farm Cooperatives

The labor union at the sawmill is strong and is reasonably effective.

The Land

Except for the Harney Basin and the National Forest to the north, the larger part of the land in this Master Unit is National Land Reserve. To the north adjacent to the National Forest, there is considerable NLR forest land. Very little National Land Reserve is withdrawn. The Ochoco and Malheur National Forests administer the bulk of the Federal Forest land in the Master Unit.

The Malheur National Wildlife Refuge surrounds and includes Harney and Malheur Lakes.

A small amount of Indian lands and the Squaw Butte Range Livestock Experiment Station round out the Federal land in this Master Unit.

The State of Oregon has the greater number of Sections 16 and 36 scattered throughout the Master Unit. An exchange to block in this land and the National Land Reserve would be advantageous to both organizations. There is very little county land in this Master Unit remaining. Irrigated private land holdings are generally small and locally owned. Many of the abandoned homesteads in the non-irrigated areas are absentee owned.

Use and Demand for National Land Reserve

1. Agriculture

There is very little demand on the National Land Reserve for agricultural use at present. Cheap electric power may increase interest in agricultural entries; but experience has shown these entries are not economic units by themselves. As there are no range privileges remaining unused in the Master Unit, they would not be available for new base lands.

2. Grazing

There are 130 licenses and permits and five section 15 leases for grazing use of the National Land Reserve in this Master Unit. The rights granted the operators are an integral part of the ranch operations and provide a major portion of the highly critical spring range forage. Use is permitted for seven summer months; however, toward the end of the season, the range usually has dried up to the point where supplemental feeding hay aftermath or irrigated pasture is necessary.

Range condition is variable but averages high fair. Much of this is due to the fact that watering spots are not plentiful. As an increasing number of stockwater developments are added, average range condition should improve because of better distribution of animals.

Poisonous and noxious weeds are not a problem. In fact, larkspur is sometimes considered a deterrent as it prevents too early grazing in the spring and overuse during the summer.

As yet, competition between cattle and big game is not a serious problem, but there is considerable competition between campers and cattle for available spring water.

Protection of the range land from fire is a serious problem. Over 50 fires per year must be suppressed. As lightning causes many of the fires, they are isolated and hard to fight. Recently burned range areas do offer excellent reseeding sites, and if seeded following fire, produce much more forage within three years.

To more intensively manage the range resources of the National Land Reserve, more roads, fences, and water developments are needed.

3. Forestry

NLR forest lands are in the northern portion of the Master Unit and are adjacent to the National Forest land. There has been recent interest by mills in the John Day Master Unit for BLM timber sales and for the smaller operators in that area the small sales are important fillers between large

Forest Service sales. The timber is practically all Ponderosa pine and, pending completion of an intensive inventory, is being harvested on a sanitation and salvage basis. The harvest cut is a high order selective cut.

Reproduction following cutting is good and because of this, a need has developed for pre-commercial thinning. Porcupines and mistletoe are a problem in certain areas.

These forest lands are also being used for grazing which, when controlled, does not harm the forests. Animals like the shade the trees offer.

Access to National Land Reserve timber is not difficult. Roads built under BLM timber sales help achieve a well distributed deer harvest.

There is little competition of use with forestry on the National Land Reserve except along Highway 395. A timber sale there has shown that removal of dead and overmature trees does not adversely affect scenery.

4. Minerals

The lack of minerals in the area has made it unnecessary to make P.L. 167 examinations.

5. Water

National Land Reserve shares an equal responsibility with the National Forest Land as a source of water. In addition, it contributes to the watershed by maintaining the quality of the water flowing through it.

6. Recreation and Wildlife

An indication of the increasing demand on National Land Reserve is the fact that prior to 1940 over half the deer harvested on this Master Unit were taken in the National Forest. Now more than half of the animals are killed on National Land Reserve and intermingled private lands. Extensive use of public lands is most important; however, development of camp sites and at least 300 miles of service roads are needed to meet the demand and reduce localized overpopulation of deer.

Hunting demand varies from year to year depending on two factors, namely, snowfall and fire danger. High fire danger or early snowfall forces hunters out of the National Forest on to the National Land Reserve.

Heavy recreation use is just beginning and, as such, the usual locked gate and no trespassing sign problems arise; however, camp facilities and BLM constructed roads will tend to solve this problem. There is considerable exploration of the National Land Reserve for arrowheads and Indian artifacts. Scenery is enjoyed from the highways.

Commercial, Industrial and Urban Use

There is no forseeable demand on the National Land Reserve for this use.

General Conclusions

1. The National Land Reserve is an integral part of ranch operations in this Master Unit. The primary range need is for sound land management coupled with adequate investments to bring it to its highest producing potential.

2. Recreation and hunting use of the National Land Reserve is high and is steadily increasing. To meet this demand, considerable investment in roads and site development is needed. As a gateway to northeast Oregon, the potential for recreation has barely been tapped.

3. There is little foreseeable demand for agricultural use of the National Land Reserve.

4. The National Land Reserve is primarily important as a source and for maintaining the quality of water.

5. Mining in this area is of little significance.

6. There is no foreseeable demand on the National Land Reserve for commercial, industrial, or urban use.

7. Timber from National Forest dominates; however, timber on the National Land Reserve is well managed and locally important.

8. Exchanges to consolidate public and private land patterns are needed. A state exchange should get high priority.

9. There is a continuing need for balanced use management on the National Land Reserve. To adequately support this management, tenure must be made more secure for permanent retention as public lands.

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STEENS

MASTER UNIT CLASSIFICATION
Burns Management Area
Steens Master Unit

Initial Analysis

Physiographic Features

The Steens Master Unit includes and surrounds the mountains of the same name in southeastern Oregon. The Master Unit is bounded on the north by Harney and Malheur Lakes, on the east by the Sheepshead and Trout Creek Mountains, on the south by Nevada State Line and on the west by the west side of Catlow Valley and Beatty Butte. The Master Unit generally includes the south half of Harney County.

The area is composed of several large valleys broken by undulating hills in the north and high mountain ranges in the south. Catlow Valley is the largest, totaling about 100,000 acres, and was a lake bed during the ice age. The most important mountain ranges are Trout Creek, Pueblo, and Steens. The latter is a tilted basalt block sloping slowly to the west and very steep to the east. It is broken up by steep, deep gorges cut by ancient glaciers.

The Blitzen River is the principal drainage, flowing north from the Steens to Malheur Lake. Other water bodies are Harney, Alvord, Fish, Mann, and Tum Tum Lakes. Most are alkali lakes in the southern portion of the Master Unit having no outlet.

Elevations range from 4,000 to 9,000 feet and average about 5,000 feet.

Social Factors

The population of this Master Unit is about 500 people and is slowly but steadily decreasing because of ranch consolidation. At one time there were considerably more people, but homestead abandonment and change from sheep to cattle operations have caused them to leave. For example, in 1911 the town of Blitzen had 500 registered voters. Major communities now are Frenchglen, population 15; Diamond, Andrews and Fields.

Many of the people are descendants of the pioneers who originally settled the area. There is no unemployment and few migrants except during the hay harvest season.

At one time this area was controlled by large almost feudal livestock barons. Peter French, Henry Miller, and David Shirk were the largest. The economic problems are pointed up by the death of Pete French, who was shot and killed by a homesteader in a dispute over range lands.

Economic Factors

Ranching and recreation are the two principal resources of this Master Unit. Practically all trade and marketing are done elsewhere, with a considerable amount of it going to Nevada.

1. Agriculture

Agriculture is limited to irrigated hay production for winter cattle feed. The possibility of frost every month of the year precludes other crops. An interesting fact is that more hay is produced on the Malheur Wildlife Refuge than elsewhere in the Master Unit.

The Catlow Valley was dry farmed at one time; but repeated crop failures due to low rainfall have precluded this use. The agricultural lands are deep and fertile; but subject to wind erosion when opened for farming.

2. Forest Products

There are no commercial forest products produced in this Master Unit, although there is a small stand of white fir in the Steens Mountains. This stand is an ecological curiosity. Afforestation with ponderosa pine has been tried in the Steens and survival after three years is good. The primary use of juniper wood is for fence posts and fuel wood; the juniper trees have their greatest value as wildlife cover and forage.

3. Range Livestock

Sheep at one time used this area almost exclusively. Now of the 70 ranching operations in the area, only four are sheepmen. Cattle feed on locally produced hay in the winter and on the National Land Reserve in the summer. Ranches are generally medium to large-sized economic operations. Only three are absentee-owned.

The wildlife refuge is an integral portion of many ranching operations and loss of a lease on this area can cause financial hardship.

4. Recreation

231 Recreation is this area is concentrated in the Steens and along the refuge boundary. It is primarily hunting, fishing, and scenery enjoyment. The Steens Mountains are one of the outstanding scenic and recreation areas in Oregon. A portion of the local population supplement their income by operating dude ranches.

Hunting for deer, antelope, upland birds and waterfowl is excellent and fishing in the rivers is outstanding. Mountain sheep have been reintroduced into the Steens to replace those which were shot out or died from scabies brought in by domestic sheep.

For the facilities available for recreation in the Steens, the demand is heavy and will become much higher when, in addition to hunters and fishermen, the rockhounds, camera fans, insect collectors, bird watchers and archeologists learn about the area. The lack of commercial facilities makes camping necessary. Camping facilities are badly needed.

Diamond Craters in the northern portion, an area of recent volcanic activity, is quite similar to Craters of the Moon National Monument in Idaho. It is attracting increasing numbers of visitors.

When there was a large population of sheepherders in the Steens Mountains, enterprising ladies provided recreation opportunities at Honeymoon Flat near Fish Lake. This form of commercial recreation is no longer available there; however, advertising signs carved on aspen trees remain to locate the site.

5. Minerals

In the past there has been little mineral activity in this Master Unit; however, as transportation facilities are improved, more development may occur.

Uranium, copper, potassium, building stone and semi-precious stone deposits have been located, but they are generally low-grade and of no present commercial value.

Secondary Industrial Development

There is no industrial development in this Master Unit.

Transportation Systems

There are no transportation systems here other than roads and these are generally of low quality. State Highway 205 is in the process of being paved while the remaining area is loosely tied together by county dirt or gravel roads.

Energy Systems

REA power lines serve the larger communities of this Master Unit. These lines will soon be connected with the Bonneville Power Administration line to Orevada, Nevada.

Water

Surface water in this Master Unit is limited and is all appropriated for irrigation or refuge use. There are undeveloped sources of ground water near Fields and Denio, Nevada, but the low rainfall of the area, averaging only 8 inches, makes it questionable if these sources could recharge after sustained high volume pumping.

The Land

Approximately 75 per cent of the lands of this Master Unit is National Land Reserve. Very little of it is withdrawn; but the Steens Mountains have been classified under Section 7 of the Taylor Grazing Act as a Multiple Use Public Land Management Area.

There are no national forests in this Master Unit.

The Malheur National Wildlife Refuge includes 170,000 acres of land in the northern part.

The state owns most sections 16 and 36 scattered throughout the area. A land exchange is indicated to block up areas to facilitate management and development of both public properties.

Harney County acquired a large part of Catlow Valley when agricultural development there was abandoned; it has since sold the land it held to several large landowners.

Private land is usually in the lower elevations and along the water courses. Holdings are medium to large size.

USE AND DEMAND FOR NATIONAL LAND RESERVE

1. Agriculture

Unless ground water is developed in this area there is little potential demand on the National Land Reserve for agricultural land.

2. Grazing

Grazing is the dominant use of the National Land Reserve in this Master Unit. Use is for a seven-month summer period, although there is a limited amount of winter range. There are approximately 70 licensees and permittees using the area and to these operators the National Land Reserve is an integral portion of their operations.

Range condition averages fair to good and has an excellent potential, particularly in the northern part and the high mountain areas.

There is some halogeton and larkspur in the area, but it is not yet a significant problem. The range needs more intensive management and to facilitate this, approximately 500 miles of service road construction and betterment are urgently needed.

Unlicensed abandoned horses are a problem and their control is hampered by inadequate laws and by laws prohibiting use of airplanes for round-up.

The range livestock competes with wildlife for forage in some areas. The usual rancher-recreationist conflicts are being resolved by Bureau of Land Management road construction detouring around private lands.

3. Minerals

Mineral activity on National Land Reserve is the same as discussed in the economic factors with the problem of erosion caused by extensive prospecting with bulldozers. There has been no PL-167 activity on the National Land Reserve in this Master Unit.

4. Water

With 75 percent of the land area, the National Land Reserve is the source and maintains the quality of the limited amount of water which is vital to agriculture and the wildlife refuge.

5. Recreation and Wildlife

234 Private lands in this Master Unit are usually posted and hunting or trespassing is prohibited. Consequently, the National Land Reserve is the space in which the various types of recreation mentioned in the economic factors can be enjoyed by the public.

Development of the area by the Bureau of Land Management has begun with the Steens Mountain service road; but it is only the beginning compared with the total needs of the area. As mentioned in the grazing paragraph, at least 500 miles of service road are needed along with many camp site developments. More and more people are coming to the area and their needs must be recognized. Use of the area by recreationists is usually several days in duration because of the long drive to and from the scenic and productive hunting areas.

Development to date has been in the Steens, but the Pueblo and Trout Creek Mountains also have high recreation value. The Diamond Craters area should be developed on a balanced use basis rather than for a single use.

Isolation of the area has limited archeological exploration; however, there are many Indian caves with petroglyphs and paintings which should be examined, evaluated, and preserved.

General Conclusions

1. The National Land Reserve, with 75 per cent of the area, is very significant to the economy of this Master Unit and as such is vital to and an integral part of the watersheds, grazing and recreation use of the area.

2. Private lands are generally closed to the public and development of public access roads to avoid these lands is necessary.

3. At present, grazing is the dominant use of the National Land Reserve and the current level of use will be continued into the future; however, there is a need for large capital investments to improve the grazing resource, coupled with sound land management.

4. Recreational use of this Master Unit is increasing geometrically and facilities must be developed to service this recreation.

5. There is a need for an exchange with the state to improve mutual land management programs. Private exchanges, though on a smaller scale, are needed also.

6. Mining, agriculture, and forestry are not significant now although they may become more important in the far future.

7. The public interest in this Master Unit will best be served by keeping the National Land Reserve in public ownership and under management on a balanced use system.

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VALE

MALHEUR RIVER

MASTER UNIT CLASSIFICATION

VALE MANAGEMENT AREA
Malheur Master Unit
Initial Analysis

Physiographic Features

The Malheur Master Unit is located in the northern half of Malheur County. Small portions of Grant and Harney Counties in the Upper Malheur drainage are included. It is bounded on the north by the divide between the Burnt and Malheur Rivers, and on the east by the Snake and Owyhee Rivers. On the west and south there are no definite physical boundaries and the limits are largely set by communication problems in this sparsely settled and generally roadless area.

The Master Unit has two use areas: (1) The flat, highly fertile irrigated valleys near Vale, and (2) the rolling to steep range uplands. The difference between these two regions is very pronounced.

There are no major mountains in the area; one river, the Malheur, and four lakes -- all of them artificial -- are the principal sources of surface water. These lakes are Willow, Warm Springs and Agency Valley reservoirs, all on the Malheur River or its branches, and Owyhee Reservoir, on the river of the same name.

Elevations range from 2,000 to 5,500 feet, with the average elevation of 3,500 feet.

Social Factors

The population of this Master Unit is about 22,000, a slight decrease since 1950 which reflects the concentration of ranch and farm holdings to make them larger, more economic units. The trend has been toward people moving to the towns and cities.

Ontario is the largest city with 5,000 population. Other cities and towns are Vale, Nyssa, Juntura, Harper, Ironside, Brogan, and Adrian. The population distribution reflects the productivity of the land. People are concentrated in irrigated agricultural areas near the Snake and Malheur Rivers.

Americans of Japanese origin represent a significant proportion of the farmers in the valleys. No other ethnic groups are present, and the population is relatively new to the Master Unit, having moved in since the development of irrigation projects. The Mormon Church has considerable influence in the area.

Unemployment of the resident population is not significant except in the spring when food processing plants are closed. However, during the agricultural harvest season, there is significant influx of migrant workers. Over 1,200 migrant workers are in provided camps; others camp or find their own housing.

Economic Factors

Economically, this Master Unit probably is more closely tied to Idaho than to Oregon. It is 400 miles from the center of Oregon's population and only 75 miles from the center of Idaho's. A good indication of this fact is that it and the Jordan Master Units are the only two in the state which are in the intermountain time zone.

1. Agriculture

Agriculturally, this Master Unit has probably the most productive land in Oregon. Bureau of Reclamation irrigation projects have made it possible to produce bumper crops of sugar beets, potatoes, onions, corn, and hay, using the combination of long hot summers and the fertile soil.

Industry in this Master Unit is dependent on agricultural crops and is located in the Northern Valley. The major industry is a sugar factory in Nyssa which processes locally grown sugar beets.

2. Others

Discussion of the Range, Forestry, Mining,and Recreation aspects of the general economic factors will be postponed until discussion of the National Land Reserve because 85 per cent of the land is under BLM jurisdiction.

Transportation Systems

Transportation facilities are concentrated in the Northern Valleys. High speed U.S. Highways 20, 26, and 30 serve the area. Highway 30 soon will be completed as an interstate freeway. State Highway 78 cuts across the southwest corner of the Master Unit. In general, secondary road facilities to the south are poor, underdeveloped, and dusty or muddy, depending on the season.

The mainline of the Union Pacific Railroad serves the northeast corner of the Master Unit with spur lines to Burns and Brogan. A commercial airline also provides limited service.

Energy Systems

Electric power in the Master Unit is privately produced and distributed. The rates are generally considered higher than those served in northern Oregon and Washington.

Petroleum fuels are transported to the area by an oil pipeline.

Water

Water is basic to the economy of the area. It is built around Bureau of Reclamation projects and supplemented by private developments. In addition to the four reservoirs included with the physiographic features, the Bully Creek division of the Vale project, a regulating reservoir, has been authorized and funds included for its construction have been included in the 1962 fiscal year budget. In the winter of 1957 a warm rain melted snow on the lower elevations and the city of Vale suffered a severe flood. Since then, the Corps of Engineers has rechanneled the Malheur River as it passes the town to prevent similar catastrophe. Precipitation averages about 7 inches per year.

Surface water is appropriated and used for irrigation. To bring more areas into production, improvement of water distribution facilities are needed to secure more efficient utilization.

There is very little ground water development in the area, probably because of the high electric rates for pumping.

Labor Unions and Cooperatives

Because of the generally agricultural economy and migrant workers, labor unions are not strong. Neither are farm cooperatives nor local planning or control groups.

The Soil Conservation Service is the only significant state or federal assistance group in the area.

The Malheur County Seat at Vale provides local government facilities.

Lands

National Land Reserve is the preponderant land ownership in the Malheur River Master Unit. Almost all of it is rolling range grassland and high desert. There are no lands under the jurisdiction of the Department of Agriculture, and only minor amounts of Reclamation, Power Site and Fish and Wildlife withdrawals.

Through private exchanges in the past, the National Land Reserve is fairly well consolidated, except in the extreme northern portion.

The State of Oregon has Sections 16 and 36 scattered throughout the area; but has blocked ownership in some areas. A State-BLM exchange to consolidate holdings over the entire area would facilitate management. Malheur County owns very little land.

Except for the irrigated farming areas, private holdings tend to be small, subsistence ranches. There are a few large ranches with some of them absentee owned.

Use and Demand for National Land Reserve

1. Agriculture

Unless considerably more water can be developed in this Master Unit, there will be no significant demand on the National Land Reserve for agricultural use. Agricultural trespass is a minor problem on corners and strips adjacent to private land.

2. Forestry

The rainfall is insufficient for tree growth. Only a small acreage of public or private commercial forest is located in the area. The only sawmill in the Master Unit, at Ironside, burned in 1951 and has not been rebuilt. The little forestry activity on the National Land Reserve is managed by the foresters of the Baker Management Area.

3. Range

Range livestock grazing is the primary use of the National Land Reserve. The entire Master Unit is in the organized Vale Grazing District. At one time sheep used the area almost exclusively; but poor markets for wool and lambs, and high costs have caused the operators to shift to cattle. At present, there are about 250 cattle operations and only 5 sheep operations under permit or license.

Range use is for a seven-month season and except for some operations which are adjuncts to row crop farming, the National Land Reserve is a vital and integral part of each ranch operation.

The large number of small generally subsistence type ranchers in the Master Unit, who are attempting to make ends meet, has created a tremendous pressure on the Federal range. The range averages a fair condition, but on the whole it is considered to be deteriorating. It is the habit of the ranchers to stop feeding hay and turn out their cattle as early in the spring as possible. This early spring use probably is the greatest contributing factor toward range deterioration.

Poisonous plants and noxious weeds are not too serious a problem. Medusa Head Rye has invaded the area and is spreading rapidly. Control measures are being investigated. Weed control and fire protection are best achieved by good range management. As the range is improved by reduced use and capital investment, low palatability and readily inflammable annual grasses and poisonous weeds are forced out by perennial grasses. The range at one time carried many more animals than it does now and has the potential for recovery.

Except for the few ranchers who have agricultural land in the irrigated region, there is little integration of range operations with agriculture except for producing winter hay. However, the trend is toward local fattening of cattle by feed lot operators other than the outside buyers.

Grazing use has little conflict with other uses of the National Land Reserve except for competition between big game and livestock for the limited forage available in some areas. The problem of overuse will tend to be solved as the range comes under intensive management.

4. Recreation and Wildlife

The major recreation use of this Master Unit is hunting in the fall. Pheasant hunting in the valleys is nationally known and brings in many out-of-area hunters. The rivers and reservoirs are important resting places for waterfowl and offer good shooting.

Big game, including deer, antelope, and elk, primarily range on the National Land Reserve. Deer are not hunted fully because of the lack of roads into some of the better hunting areas. An estimated 500 miles of service roads are needed on the National Land Reserve to develop the hunting potential to its highest. These roads would greatly aid range management also.

Recreation other than hunting has a more local orientation. Fishing in the streams and reservoirs has a year-round demand along with "rock hounding". There has been some commercial development of the gem stone business.

Boating on lakes other than Owyhee Reservoir is largely by fishermen; however there is considerable use of that lake for water sports. If the roads to it were better, the use would be many times heavier. This sport attracts residents of Boise Valley, Idaho.

Tourism and scenery enjoyment are discouraged by rather poor accommodations and roads to the more scenic areas. Many Californians traveling U.S. 95 to the south and east of the Master Unit could be diverted into the area.

5. Minerals

Gold and silver mining were important in earlier times but with increased costs and exhausted surface deposits have almost ceased. The major activity now is in the common varieties, principally decorative building stone.

Near Harper there is a deposit of diatomaceous earth which has not been extensively developed. Discovery cuts by bulldozers in the area have created a minor erosion problem.

Commercial gem stone claims located under the mining laws are presently being worked.

6. Water

Streams on the north slopes of the Master Unit rise in the National Forest and pass through the National Land Reserve. On the south, the BLM jurisdiction includes the water sources.

The water from these streams is the base of the downstream agriculture. Consequently, the quality and quantity of the water flow must be maintained. Fortunately the light amount of precipitation on the area has limited the erosion in spite of erosive soils and scant vegetative cover provided by sagebrush.

General Conclusions

1. The National Land Reserve is vital to and an integral part of the range livestock industry in the Malheur River Master Unit. At present the demand for this use is higher than range capacity.

2. Recreation use is heavy now and is increasing. National Land Reserve provides the space for much of this recreation. Site developments and service roads are urgently needed to aid this use.

3. NLR lands are the source of much of the water used for irrigation. As irrigated farming is the primary source of income, the quality and quantity of water coming of NLR land must be maintained and improved.

4. There is only a limited present demand for National Land Reserve for commercial, urban, or industrial site use.

5. A State-NLR exchange to block-up both land ownerships is needed to facilitate intensive management of all resources.

6. Range conditions require substantial capital investment to return them to their full carrying capacity. This investment must be accompanied by a temporary reduction in use.

7. Except for recreation, the social and economic factors are relatively stable and there is no foreseeable significant change in use and demand for the National Land Reserve.

8. Because the National Land Reserve occupies such a large portion of the land resource, it is imperative that except for minor adjustments it be managed on a sustained, balanced use system in perpetuity.

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JORDAN VALLEY

Master Unit Classification Study
Vale Management Area

Jordan Master Unit

242 ## Initial Analysis

Physiographic Features

The Jordan Master Unit is located in the extreme Southeast corner of Oregon, occupying the South half of Malheur County. The East boundary is the Oregon-Idaho State line and the South is the Oregon-Nevada State line. The West boundary is the Trout Creek Mountains and the North is the divide in the high desert between Crooked Creek, the Malheur River and the Owyhee River. It is a large sparsely populated area with many little known landmarks.

The Owyhee River is the most important drainage flowing generally north into Owyhee Reservoir. This river and its tributaries have cut deep canyons through the entire Master Unit.

There are several short streams running off mountains which are scattered throughout the area. These streams, upon reaching the desert, form either alkali lakes or dry up.

Owyhee and Antelope Reservoirs are the only significant lakes. The southerly portion of the area is drained by the Quinn River which flows into Nevada.

There are three general land form areas in this Master Unit. The North portion, including the Mahogany Mountains, is characterized by steep broken topography. This area slopes toward the Central portion which is a flat, high desert. In the South, the topography is gently rolling broken by sharp canyons.

The Master Unit has been subject to recent volcanic activity and lava flows and cinder cones are scattered throughout the area.

Elevations range from 2,000 to 8,000 feet with an average of about 5,000 feet.

Social Factors

The 1960 census shows this Master Unit to have a population of 850. Consequently, social factors are extremely limited. There are two concentrations of population: one in the Jordan Valley with 300 people and the other near McDermitt, Nevada with 50.

There have been few recent changes in population over the last decade, either internally or in total. Ranches were big to begin with and there have been few consolidations.

There are three definite social and ethnic groups, the descendants of the original settlers, Basques, who originally came as sheepherders, and Indians from the Fort McDermitt branch of the Duck Valley Indian Reservation.

There is considerable seasonal underemployment except during hay harvest. There are no migrant workers.

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Economic Factors

This Master Unit is economically oriented toward Nevada and Idaho. The chief connection it has with Oregon is political affiliation.

The economy is based on three factors: Range livestock, mining and recreation. There are no forests or industry, and very little agriculture. Since the National Land Reserve includes about 90% of the total land area, the three income producing occupations will be discussed within the lands portion of this analysis.

Transportation

The area is served only by roads. U. S. Highway 95 runs from Winnemucca, Nevada to Parma, Idaho, effectively orienting this area toward these states. This is a tourist route, but very few linger in the area. Oregon Highway 78 connects the area to Burns, Oregon. Others in the area are county or private low quality gravel or dirt roads.

Energy Systems

REA electric lines are now being extended through Jordan Valley. The new Bonneville Power Administration line to Orevada, Nevada can in the future bring public power to the southern portion of the Master Unit.

Petroleum products are the only other currently available source of energy.

Water

Precipitation ranges from 6" to 12" and averages about 8 inches. Except for the Owyhee River and its major tributaries which are located in deep canyons, the small amount of runoff is used for livestock water

and irrigated hay pastures. The amount of surface water available is usually insufficient for present needs.

There is a possibility of limited ground water development in the Southwest corner of the Master Unit now that hydroelectric power from the Columbia is becoming available.

The Owyhee River which rises in this Master Unit, provides much of the water for downstream irrigation near Ontario and Vale. This water is impounded by the Owyhee Dam.

As the National Land Reserve has 90% of the land in this Master Unit, it is the most important watershed.

244 Public Works Projects

The Bureau of Reclamation has proposed construction of a dam at Duncan Ferry on the Owyhee near Rome. This water would be primarily for use downstream rather than in the area. This proposed dam and a now abandoned radar station are the only federal public works projects.

The Lands

The only significant private lands are those in the creek bottoms which were patented under the agricultural land laws and a 6-mile checkerboard strip running diagonally Southwest from Jordan Valley. In the latter, alternate sections were granted to the contractor who built a military wagon road through the strip from Fort Boise to Fort Klamath in the pioneer days. The lands along major watercourses are generally withdrawn for Reclamation or Power Site purposes; those along the Owyhee were withdrawn by an overlapping executive order for fish and wildlife purposes. There is also a small Indian reservation near McDermitt.

The State of Oregon owns practically every section 16 and 36 throughout the Master Unit.

County land is sold to oil and land speculators almost as fast as it is acquired. This indicates a demand for suitable land when available.

Private holdings in the Northern half of the Master Unit are small and generally subsistence operations. To the south the operations are larger and more economic. Several of the larger ranches in the south are absentee owned.

Use and Demand for BLM Land

1. Agriculture

Agricultural demand for National Land Reserves in the Southwest portion of the Master Unit could become significant if sufficient ground water can be developed with electric power. However, the cool climate and long distance to market might result in the better agricultural land law entries being marginal propositions.

There is some agricultural trespass on National Land Reserve adjacent to privately owned farm land.

2. Range

The agriculture of this area is almost exclusively devoted to producing irrigated native hay for winter livestock feed and is integrated with ranching operations. The amount of hay produced is often insufficient to carry the livestock through to late spring. Consequently there is great pressure to turn the animals out as soon as the first green blade of grass appears.

Range livestock use of the federal range averages seven months per year. This is summer use, except for an area in the high desert in the West Central portion of which is used as winter range.

Bureau of Land Management land is integral of all range operations and supplies about 60% of the total annual forage for the 130 permittees and licensees who use the range.

Cattle predominate now, but sheep in the past used the area almost exclusively. Cattle are raised to stocker or feeder size and are shipped out for finishing.

Range condition averages fair over the Master Unit, but it is presently producing much less than it could. Problems and frustrations of Bureau of Land Management management of the area have been discussed in the book Politics and Grass by Phillip O. Foss.

On lands where management has been intensive, the range condition has improved since 1934. The poisonous plants Halogeton and Larkspur are present and are spreading to areas of overuse.

Horse trespass by unclaimed or abandoned animals in increasing and prohibitions against rounding them up with airplanes have made it virtually impossible to solve the problem.

Other than those noted, the only other conflict of use in the range livestock industry is with big game for limited available forage in certain areas.

3. Minerals
Except for some rockhound gem stone claims located under the mining laws, There is no significant mineral activity. A cinnabar mine near McDermitt, Nevada operates occasionally. There are no known leasable minerals; no areas have been investigated and published under PL 167 procedures.

4. Recreation & Wildlife
Most recreation use of the Master Unit is by out-of-area people because of low resident population. The isolation and lack of recreational facilities has tended to discourage this type of use. An estimated 500 miles of service road are needed to enable out-of-area people to enjoy the scenery and to harvest the game which is overstocked in many places.

The Owyhee Reservoir and Canyon attracts many people from Idaho for water sports and fishing.

For wildlife, (big game), the National Land Reserve pastures them all year except in the late summer and the winter when part of the herds move to hay meadows.

Jordan Craters, an area of recent volcanic activity, is in this Master Unit. These craters are similar to the Craters of the Moon National Monument in Idaho and have been inspected by the National Park Service for possible inclusion in a National Monument. We believe if any such action be taken, the monuments be restricted to the area of truly significant and distinctive recent volcanic activity and should not be applied to the major part of the Master Unit which is admirably suited for balanced economic, recreational and watershed uses.

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General Conclusions

1. The National Land Reserve dominates this Master Unit.

2. There is no present demand on the National Land Reserve for commercial, industrial or urban use. There is an indicated demand for lands having agricultural or recreational potentials.

3. An exchange with the State of Oregon to block up its scattered lands would be advantageous to both the State and BLM.

4. Demand for grazing privileges on National Land Reserve is high and present use must be reduced. With this reduction a substantial capital investment is needed to bring the range back to its highest producing potential. When making this reduction and investment, it must be remembered that NLR is an integral and vital part of each ranch operation supplying 60% of all forage.

5. National Land Reserve constitutes practically the entire watershed of this Master Unit. The surface runoff is basic to the downstream irrigated farming areas and to local ranchers.

6. Current recreational use is high, and the prospects are for increasing use. Extensive development of sites and roads, both transportation and service, are urgently needed. As facilities are developed, use of them will increase in the same proportion.

7. The year round overpopulation of big game is compounding the range management problem. Additional roads will assist in their harvest.

8. Before Jordan Craters is set aside as a single-use recreation area, it should be carefully evaluated for all other present and prospective uses.

9. There is a continuing need for balanced-use management of the National Land Reserve. To facilitate management, land tenure must be assured.

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Census Data, 1950 and 1960

LAKEVIEW

LOST RIVER

Master Unit Classification

Lakeview Management Area
Lost River Master Unit

Initial Analysis

Physiographic Features

The Master Unit is bounded on the south by California; on the West by Klamath Lake and the Cascade Mountains including Crater Lake in the northwest corner; on the north there are no definite boundaries other than the north boundary of the now terminated Klamath Indian Reservation; and on the east by Summer Lake and the divide between the Klamath River and the Goose Lake drainages.

It includes the south 2/3 of Klamath County except for the portion south and east of Klamath Lake. A small portion of Lake County is included in the northeast corner of the Master Unit.

Mount Mazama, Crater Lake and the Cascade Summit in the northwest corner are the most significant land forms in this Master Unit. The remainder is flat to rolling broken by relatively low mountains.

Major watersheds include the Williamson, Sprague, Sycan, and Lost Rivers. There are three major lakes: Crater Lake, Agency Lake and Gerber Reservoir.

Elevations range from 4,000 to 8,000 feet with the average in the basin about 5,000 feet. Practically all the National Land Reserve in the Master Unit is located in the basin proper.

Social Factors

Population of this Master Unit is approximately 42,000 and has increased about 13% since 1950. Klamath Falls with Altamont is the largest city with 26,000. Other important communities are Merrill, Chiloquin, Fort Klamath, Malin, Bonanza, Beatty and Bly. Population is concentrated in the southwest corner of the Master Unit. The rest is timbered and is sparsely populated. This was not the case 30 years ago when there were several large sawmills in the timbered area. When these mills closed the labor force moved to the southern part of the Master Unit.

Indians from the Klamath Reservation are an important ethnic group. Many individuals have recently received $43,000 as their share of the proceeds of the reservation termination.

Many of the ranchers are descendants of the original settlers.

Activation of Kingsley Field Air Force Base has brought in a large population of military personnel.

General unemployment is not a problem; however, seasonal unemployment of woods workers and some agricultural labor is significant. Agricultural labor is mostly local with very few migrants.

Economic Factors

Klamath Falls is the trade center for the entire basin and a large portion of northwestern California.

1. Agriculture

The Bureau of Reclamation Klamath Irrigation District in the southern end is the basis of most agricultural activity in this Master Unit. Potatoes, hay, grain with fattening of beef cattle and dairying are the most important. The basin enjoys a four-month, hot growing season but has the threat of a light frost every month.

The agricultural soils are alluvial or organic, deep and fertile. They are light and subject to wind erosion if dry and without vegetative cover.

2. Forest Products

There are five major sawmills in the vicinity of Klamath Falls and a hardboard plant at Lobert. This represents a great reduction from 1925 when there were 17 major sawmills in the Klamath Falls area. The total output of lumber has been greatly reduced, but mill capacity is still greater than growing capacity. This situation may change as the inventory of the area may increase the allowable cut. Except for Weyerhaeuser Company the private timber in the area has all been cut out and mills are dependent on Federal stumpage. The fast roads give operators a large economic radius and it is not uncommon for a mill to truck logs 70 to 100 miles.

A large part of the timber is cut into lumber but there is considerable secondary manufacture including hardboard, moulding, presto logs, chips for pulp and box shooks. The recently installed hardboard plant has created a market for lodgepole pine, previously a weed tree, and more hardboard plants may be expected if this one proves to be an economic operation.

3. Range Livestock

Range livestock operations in this Master Unit are usually integrated with farming. By themselves the cattle would not be economic units but combined with farming they are. Ranches are largely home owned and operated and sell calves rather than feeder cattle. Near the Fort Klamath area there are extensive share pastures and this arrangement permits the profit on an animal's gain to be split between pasture owner and the animal's owner. Western Oregon lumbermen are, in the main, the absentee owners of a few ranches.

4. Recreation and Wildlife

Crater Lake National Park attracts many out of area recreationists to this Master Unit. This influx when coupled with the large urban population has created an extremely heavy and increasing demand for recreation facilities. The Klamath Basin is one of the best waterfowl hunting areas in the west. This sport is supplemented by big game and upland bird hunting, fishing, water sports, rockhounding, winter sports and scenery enjoyment. There are many Indian artifacts available for collection; however, anthropologists find the Indians have discarded their original culture. Captain Jack's stronghold and battlefield in California just to the south of this Master Unit, is a reminder that at one time the Indians were not too well integrated into the local society.

There are many public recreation areas which need further development. The Klamath County Recreation Commission encourages and promotes local recreation activity.

5. Mining

Except for pumice there has never been any significant mining in this Master Unit. There is very little prospecting now.

Secondary Industrial Development

Industry is dependent on locally produced resources and grain elevators. When lumber manufacturing was in its hayday, there was considerable steel fabrication, but this has been reduced in importance. The hardboard plant is the latest addition to local industry.

Transportation Systems

The heavily populated areas of this Master Unit are well served by high speed roads. U.S. Highway 97 is the main north-south road with Oregon Highways 39, 66, 70, 62 and 232 branching off from it. A good network of county roads tie together the rest of the heavily populated areas. The more sparsely populated areas have been developed by logging roads. The generally flat terrain encourages road building.

The mainlines of the Southern Pacific and Great Northern Railroads serve the area with a spur line to Bly. Much of the early logging in this area was by railroad, but the steel on these railroads has been removed.

The Master Unit is served by two commercial airlines.

At one time there was considerable water transportation on Klamath Lake, but now there is very little.

ENERGY SYSTEMS

The Master Unit is served by a private power company which has an intertie to the Bonneville system to the north. The BPA California intertie is now being considered. A high pressure gas line makes natural gas available to the basin.

A considerable portion of Klamath Falls is heated with steam from natural steam wells.

Water

Except for domestic use, water in this Master Unit is primarily surface water, although there has been some recent ground water development. Downstream hydroelectric developments on the Klamath River have rights to a certain flow; consequently, not all of the water in the Master Unit can be appropriated and used for irrigation. The Klamath Irrigation District has been in existence since 1905 and final construction is just about complete.

Water control on the Klamath Drainage is by a California-Oregon interstate compact. As the lower Klamath River drainage is developed there may be pressure to allow more water to pass downstream. Water is scarce now. There is a continuing problem of maintaining the water level of Lower Klamath Lake in the Lower Klamath Lake National Wildlife Refuge just across the border in California.

Precipitation averages 15 inches with most of it falling during the winter in the mountains.

Federal Public Works Projects

In addition to the Klamath Irrigation district of the Bureau of Reclamation, Kingsley Field Air Force base has a significant effect on the local economy. The air base has the largest pay roll in the basin and since it was activated in 1955 the population of Klamath Falls has increased by 5,000.

Labor Unions and Farm Cooperatives

Labor unions in the wood working industries and the railroads are strong and effective. There are many farm cooperatives.

Local Planning and Control Groups

The Klamath County Planning and Steering Committee is very effective in local planning and zoning and have had a good effect in assisting the orderly development of the county. This committee is effective in planning and directing recreation development of the county.

Oregon Technical Institute in Klamath Falls is a recently established state endowed college. It is being enlarged and several million dollars are to be spent on it annually.

The Land

National Land Reserve, except for the Bonanza Organized Grazing District in the southeast corner, is Section 15 uplands between valleys in the southern third of the Master Unit. There is a need to encourage exchanges to block-up areas which are needed for balanced use management. A significant acreage is presently included in Reclamation withdrawals in the Lost River drainage. Now that the reclamation project is almost completed, a withdrawal review is in order to determine the residual needs of the project and restoration of the balance.

National Forests including the Rogue River, Fremont and Winema, which formerly was the Klamath Reservation, are the preponderant Federal jurisdiction in this Master Unit.

Upon termination of the Klamath Reservation, the Bureau of Sport Fisheries and Wildlife assumed jurisdiction of Klamath Marsh as a wildlife refuge.

Crater Lake National Park rounds out the Federal jurisdiction in this Master Unit.

Indians who elected to remain in the tribal organization upon termination of the reservation have their lands held in trust and managed by the U.S. National Bank of Portland, Oregon.

The small amount of State Land in the Master Unit has been offered to the BLM for exchange. Klamath County owns no land.

Use and Demand for National Land Reserve

Near Swan Lake Valley there is potential agricultural development on National Land Reserve if water becomes available.

There is some agricultural trespass on corners and strips adjacent to privately owned farm land.

1. Grazing

Livestock use of the National Land Reserve is exclusively cattle. The forage resource of the organized grazing district is an integral portion of ranching operations. Overall, on the lands leased under Section 15, the lands may not be an integral part of the ranch operations; however, they do supply some of the critically short spring range. If the ranch operation is small, the NLR which the operator has under lease is highly important to his operations.

Range conditions average poor to fair and on Section 3 lands they are improving. On Section 15 lands, the range is deteriorating. Poisonous plants and noxious weeds are not a problem, although there is a small infestation of Medusa head rye.

There are 67 Section 15 leases on 62,000 acres and 25 Section 3 permits and licenses.

The biggest conflict of use on the National Land Reserve in this area is the competition between livestock and big game for forage. There is an interstate deer herd which spends its summers in the Oregon mountains and winters on the state boundary. This is a large herd and its close concentration in the winter puts an extremely heavy burden on the range.

2. Forestry

Compared to the national forests, the amount of timber removed from the National Land Reserve is a minor quantity. However, it is locally significant and in the past five years the available cut has been increased to help tide over local mills when no Indian timber was being offered for sale during termination proceedings.

The timber is practically all ponderosa pine and pending completion of an intensive inventory in 1961, the cutting program on BLM lands has been one of sanitation and salvage. The harvest cut will be a high order selection system.

A good forest road system has been completed in the Bonanza area and easement acquisition in other areas has not been difficult.

Protection is by force account crews in the Bonanza area, by contract with the Klamath Forest Protective Association, and by an effective county fire warden system.

In recently planted areas, there is some damage to seedlings by range use and a similar situation occurs when there is a heavy population of deer. Cutting of mature trees encourages vegetative growth and makes wildlife habitat and hunting much better.

Many of the forest areas cut between 1900 to 1930 are now in need of reforestation because of repeated fires, trespass, rodents, and drought. Much of the timber in the Section 15 lands is small, needs thinning, and is subject to Christmas tree trespass. However, cooperative action by local landowners, law enforcement offices, and the Klamath Forest Protective Association has practically eliminated this problem.

3. Mining

Other than some areas permitted to the county for road gravel, there is no mineral activity in this Master Unit.

4. Water

Much of the Klamath Irrigation District is dependent on water from the Lost River Drainage in which the National Land Reserve is the primary watershed. Water is currently valued at $9.00 per acre foot in one district - considerably higher than average. Over the remainder of the area the contribution of the National Land Reserve is to maintain the quality of water flowing out of the National Forests.

5. Recreation and Wildlife

There has been very little development of recreational facilities of the National Land Reserve in this Master Unit other than roads which resulted from forestry operations in the Bonanza area.

The high urban population and the large number of out-of-area users have created great need for camp sites and facilities.

Gerber Reservoir has had 500 visitors on a weekend and, because of the lack of facilities, causes a serious fire hazard as recreationists spread over the area.

In the Section 15 area, there are problems of access for recreationists to public lands. A local grievance committee has been formed to settle these disputes; while this is helpful, the basic problem of the public not being able to get to the National Land Reserve remains. A considerable mileage of road is needed to open these areas for recreation and management. The increasing popularity of the National Land Reserve in this area makes it necessary to retain all sites potentially valuable for recreation. 37 sites have been designated.

Commercial, Industrial and Urban Use

The increasing population has generated considerable interest in the National Land Reserve for small tract development. Most of it is near areas which are more valuable for public use and has been discouraged. However, one area of National Land Reserve near Moyina Hill is adjacent to some fine homes and should be considered as a small tract area when the demand is sufficiently high. Before any small tracts are allowed, it will be necessary to work closely with the Klamath County Planning and Steering Committee to develop standards of construction.

General Conclusions

1. Water is in critical supply for both local and downstream use. The National Land Reserve is significant in producing and maintaining the quality of water.
2. Recreational use of the National Land Reserve is heavy and will increase. To provide for this recreation, considerable investment is needed in roads and facilities.
3. Forest products from National Land Reserve are secondary to national forest production; however, National Land Reserve timber is significant to the local economy.
4. National Land Reserve range lands are integral portions of many ranch operations and provide critical spring range. These range lands need considerable capital investment and more intensive management.
5. Except for common varieties, minerals are of no importance in this Master Unit.
6. Agricultural potential on National Land Reserve is minor.
7. National Land Reserve is highly important in providing forage and habitat for wildlife.
8. Commercial, industrial and urban land needs are now supplied by private land; however, an excellent potential demand for urban housing areas on National Land Reserve exists near Klamath Falls.
9. There is a need for an exchange program to facilitate management of the National Land Reserve.
10. There is a need for secure tenure and balanced use management on the National Land Reserve in this Master Unit.

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FORT ROCK

Master Unit Classification
Lakeview Management Area
Fort Rock Master Unit

Initial Analysis

Physiographic Features

This Master Unit is named for a prominent rock formation resembling a medieval fortress in the western end of the Master Unit. It is bounded on the north by the central Oregon high desert, on the west by the divide between the Deschutes River and the Silver Lake drainage, on the south by Christmas Lake Valley and on the east by Wagontire Mountain. The Master Unit is a high rolling plateau cut by broad valleys. There are no major drainages and Silver Lake is the only large body of water. Elevations range from 4,300 to 7,400 feet and average 4,500 feet. The Master Unit is in the north half of Lake County.

Social Factors

The total population of this Master Unit is approximately 400. Silver Lake with 200 people and Fort Rock with 15 are the only significant communities. There has been a slight increase in population since the REA power lines were built in 1955. Much of the population are descendents of the settlers who settled the area in 1912. Labor supply is local and there is little unemployment.

Economic Factors

1. Agriculture

Agriculture is limited to irrigated alfalfa, native hay and dryland rye production. Most of this production is for winter livestock feed. The growing season is 90 days with killing frosts possible every month of the year. Soils are sandy and are highly susceptible to wind erosion when plowed for agriculture.

REA power has made it possible to develop ground water and there is an increased interest in pumping irrigation. However, the short growing season and high land preparation costs, make this an extremely risky investment.

2. Forest Products

There is one small sawmill which cuts rough boards in this Master Unit. Most logs are trucked out of the area to Bend or hauled by private railroads to Klamath Falls. Private lands have all been harvested.

3. Range Livestock

Cattle predominate in the range livestock industry in this Master Unit. There is only one sheep operation. Ranches are dependent on their own locally grown hay for winter forage. Ranches are medium sized operations except for the large ZX which at one time was the Oregon branch of the Kern County Land & Livestock Company of Bakersfield, California.

4. Recreation and Wildlife

Recreationists come almost exclusively from out of the area. The isolation and lack of roads in the Master Unit have kept use and demand light. Hunting and search for arrowheads and artifacts is the limit of present use. Hunting is too light to hold down the deer herd and the west and west half of the north sides of the Master Unit is heavily overstocked with big game. Fort Rock was the home of civilization 10,000 years ago, soon after the ice age, and is fertile country for archeologists.

5. Minerals

There is very little mining. Oil and gas drilling has resulted in dry holes. Uranium deposits are too low grade to be of commercial value.

6. Transportation Systems

Oregon Highway 31 is the main route through this country. There is a paved county road to Fort Rock and the road to Klamath Falls will be paved soon. Other roads in this Master Unit are few and far between.

Energy Systems

The area is served by an REA line from LaPine, Oregon.

Water

Surface water development is limited to the Silver Lake area with water from Thompson Reservoir, constructed in the early 1920's.

There is ground water at 50 feet over six Townships of Fort Rock Valley. The REA power has encouraged development of land for pumping irrigation. The Geological Survey is investigating the ground water supply of the area to determine whether it can sustain pumping, present indications are favorable.

Precipitation ranges from 7 inches to 35 inches per year with an average of 10 inches.

The Lands

About one million acres or fifty percent of this Master Unit is National Land Reserve. The land is practically all range except for about 20,000 acres of forest land. Included with this million acres are 94,000 acres of land utilization projects managed by the Bureau of Land Management. The remaining Federal land is held in the Fremont and Deschutes National Forests on the west side of the Master Unit. The state owns most of the sections 16 and 36 in the east part of the Master Unit.

Private land is practically all farm or grazing lands and is all locally owned except for one or two ranches.

Use and Demand for National Land Reserves

The Land Utilization project in the area is evidence of the failure of dryland farming. Development costs of $90 to $150 per acre with a short growing season make ground water irrigation projects risky. Consequently, applications for agricultural entry in this area on National Land Reserve should be carefully considered.

1. Grazing

Thirty-five licensees in this area are highly dependent upon the National Land Reserve for three to seven months' use in the summer. There is some winter use by livestock. Average condition of the range is fair to poor due to overuse and lack of adequate management. About eighty percent of the Federal range has a high potential while the remainder has poorer soil and a fairly low potential. However, this poor area must be protected from overuse and erosion.

Poisonous plants and noxious weeds are a minor problem.

A serious need for roads and rehabilitation of the range exists. Conflicts between livestock and the over-population of deer for forage are a continuing problem.

2. Forestry

This Master Unit contains the Lost Forest, a Ponderosa pine stand in the middle of a grass and sage valley. It is an ecological curiosity and is being studied by ecologists and botanists. Other BLM forest lands are adjacent to National Forests.

Pending completion of an intensive inventory planned for in 1962 the cutting program has been limited to a sanitation and salvage cut which is now complete.

Reproduction of cutover lands is difficult. Overpopulation of deer and porcupines are a problem in protecting young growth stands.

National Land Reserve timber is not significant to the local economy; but it does provide supplemental sales between large Forest Service offerings.

3. Minerals

There has been no PL-167 activity in this Master Unit.

4. Water

The facts discussed in the water portion of the Economic Factors hold here. In addition, the National Land Reserve is essential for recharge of ground water supplies.

5. Recreation and Wildlife

To reduce the overpopulation of deer in this Master Unit 200 miles of service roads and other facilities are needed. With these roads, hunters would be able to get within a reasonable distance of the game for an orderly harvest under proper game management. For the facilities available, recreation pressure is high but with adequate developments these could be satisfactory.

Lava beds on the National Land Reserve attract some sightseers to the area. Fort Rock, caves where the civilization of 10,000 years ago lived, was given to the county in 1956 for a recreation site.

At Silver Lake, there is a public shooting ground on National Land Reserve.

Commercial, Industrial and Urban Use

There is no foreseeable commercial, industrial or urban use of National Land Reserve in this Master Unit.

General Conclusions

1. Surface water runoff in this Master Unit comes mostly from the National Forest. Where this runs through NLR lands, the quality must be maintained. National Land Reserve is the primary source of recharge of the ground water supplies of the Fort Rock area.

2. Pressure for agricultural development by desert land entries on the National Land Reserve and land utilization projects in this Master Unit are high and may become higher.

3. The National Land Reserve is an integral part of ranch operations in the Master Unit. The range condition is not good and it is in need of rehabilitation.

4. Year round and particularly winter overpopulation of big game on National Land Reserve, conflicts with range and forestry uses of the land on the west and west half of the north sides. More service access roads are needed to encourage hunters to properly harvest these deer.

5. A need exists for development of recreation sites on National Land Reserve.

6. Forestry is of minor importance on NLR lands in this Master Unit; however, the Lost Forest is an ecological curiosity and is being studied by college scientists.

7. Land Utilization project lands should be intensively managed and their tenure established.

8. State and private exchanges should be encouraged to consolidate ownership and aid management.

9. There is a need for secure tenures and continued balanced use management of the National Land Reserve in this Master Unit.

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with Office of Oregon State Engineer)

ABERT

Master Unit Classification
Lakeview Management Area
261
Abert Master Unit

Initial Analysis

Physiographic Features

The Abert Master Unit is located in the center of Southern Oregon. It is bounded on the south by California, on the west by the divide between the Goose Lake Drainage and the Lost River and Winter Ridge, on the north by Christmas Lake Valley, and on the east by the west side of Catlow Valley. It includes the south half of Lake County and a portion of southwest Harney County.

The most significant land form in this Master Unit is Abert Rim, an earthquake fault. This rim slopes gently to the east and has a maximum drop of 2,500 feet abruptly to the west.

Rivers in this area are small with the Chewaucan and the Ana the most important. Ana River rises from a spring and flows five miles into Summer Lake.

This is a large basin country and as a result Abert Lake and Summer Lake are alkali. Fresh water lakes include the Warner chain of lakes and Drews Reservoir.

The topography is flat to rolling broken by steep rims. Elevations range from 4,200 to 8,500 feet.

The Master Unit includes a hot water artesian aquifer and several hot water wells and geysers have been drilled.

Social Factors

Population of this Master Unit totals 6,600. Of these, 5,700 are concentrated in the Goose Lake Valley; Lakeview has a population of 3,200. Other villages and communities are Paisley, Adel and Plush. The population of the Master Unit has increased 10% since 1950, most of it in Lakeview. However, recent closing of the uranium mill is causing a decrease in population.

There are no migrant workers in this Master Unit. Seasonal unemployment of woods workers is not too significant because sawmill crews log during the summer and work in the mill in the winter.

Economic Factors

Lakeview is the commercial center for this Master Unit and much of adjacent California and Nevada.

1. Agriculture

Agriculture in this Master Unit is primarily irrigated pasture, hay and small grain. There is some dryland farming on the better sites. The growing season is short and hot with frost possible every month of the year. Agricultural soils are alluvial with a tendency to be alkaline. Wind and water erosion may be severe if careful farming practices are not followed. Agriculture is primarily for the production of winter livestock feed.

2. Forest Products

There are four sawmills in this Master Unit. Forest Service timber is restricted by a marketing unit, so mill capacity about equals growing capacity. There is little pressure from outside operators to change this situation, but more favorable lumber markets might call for reexamination.

There is very little private stumpage left. Production is limited to lumber for shipment and remanufacture outside the Master Unit.

3. Range Livestock

There are no operations producing exclusively sheep in this Master Unit. Range operations are cattle ranches integrated with agriculture and the hay producing capacity is closely balanced with the range capacity. Unseasonal use and over-stocking has resulted in abuse to part of the grazing land.

Most ranches are good sized, working economic units with very few of them absentee owned.

4. Recreation and Wildlife

The greatest local recreational use of this Master Unit is for fishing. Out-of-area use is two-fold: hunting for waterfowl and big game, and for tourism. Highway 395 and the Winnemucca to the Sea Highway bring in large numbers of tourists who fill overnight facilities during the summer season and flow out into the rural areas for overnight camping. There are very few facilities for this camping and as Highway 395 is improved the demand will become higher.

Goosehunting in this area is outstanding. The 17,000 deer hunters who were in the Master Unit during 1960 did not reduce the overpopulation of deer. Antelope, mountain sheep, upland birds and recently introduced Mongolian Pheasants round out the game. The snow in this area is excellent for skiing, but the long distance from major population centers limits its use.

There is not much use of alkali water for boating or water sports. This recreation is concentrated on the fresh water lakes and reservoirs.

Agates and thundereggs are abundant. Coupled with this fact, artifacts left by the large population of Indians prior to 1850, attract many artifact hunters and rockhounds.

5. Minerals

There has been sporadic gold mining throughout the years in this area; but mining did not get started until construction of a uranium mill in 1955. The one source is low grade and current low price of uranium has forced the mill to close.

There has been some activity for perlite; however, there has been no manufacture. Oil and gas explorations in the area have drilled to 13,000 feet without results.

Secondary Industrial Development

Other than mining and lumber manufacture, there is no industry in this Master Unit. Poor transportation facilities probably do much to prevent establishment of new industries.

Transportation Systems

U.S. Highway 395 and Oregon 31 are the main north-south roads in this Master Unit. Oregon 66, the Warner Valley road and the Winnemucca to the Sea Highway, tie it together east and west. Indicative of the poor transportation system is the fact that land examination by the BLM in the area is cheapest when done with the aid of a helicopter.

A spur line of the Southern Pacific Railroad comes into Lakeview from the south.

Lakeview is served by a scheduled commercial airline.

Energy Systems

An REA Cooperative in the area ties into Nevada sources. In the future a tie-in with the Bonneville and central valley systems is possible. There are no natural gas systems. Hot water from artesian wells provides a small amount of domestic heating. This source is not extensively developed.

Water

The last shooting over possession of a water hole in this Master Unit in 1939 indicates how important the limited supply of water is to the local economy. There is no significant groundwater development. Surface water is used for irrigation primarily. The north and east portions of the Master Unit are mostly arid and the bulk of the water is located in the southwest portion, flowing from the National Forest. Except for Drews Reservoir, there are no water storage facilities and consequently much of the spring runoff is lost into the alkali lakes. Preciptation ranges from six inches to 36 inches and averages about ten inches.

Federal Public Works Projects

There are no federal public works projects in this Master Unit and none are proposed.

Labor Unions and Farm Cooperatives

Unions and cooperatives are very weak in this Master Unit.

Local Planning and Control Groups

Local planning and zoning committees are just getting started in this Master Unit; prior to this, such activity was done by the County Court at Lakeview.

Public Institutions

There are no state institutions, but a local endowment fund is available to pay the way of the top ten percent of the high school class to any Oregon State endowed college. This fund sends ten to fifteen students to college each year.

The Land

The National Land Reserve with about 2,500,000 acres, is fifty percent of the total acreage of this Master Unit. The land is largely range land. The National Land Reserve in Warner Valley has been classified as a Public Land Management Area under Section 7 of the Taylor Grazing Act. This land is managed in cooperation with the State Fish and Game Department.

The Fremont National Forest occupies the mountainous timbered areas.

The Hart Mountain Antelope Refuge completes the Federal land jurisdiction. The trouble with this refuge is that few antelope stay on it as most prefer the National Land Reserve outside it.

A bombing range has been proposed for the Wagontire area. The state owns most of the Sections 16 and 36 and the swamp lands. Much of this land is included in the offered lands of the Boardman exchange. There are no county lands in this Master Unit.

Private land ownerships in the Goose Lake Valley are small to medium but those in the Warner Valley and the Chewaucan River drainage are large. These are permanent livestock operations and are locally owned.

Use and Demand for National Land Reserve

Lands under BLM jurisdiction are primarily range lands and are generally well consolidated. However, some private exchanges and a large state exchange would improve management of the area.

1. Agriculture

There are some desert land entries on the National Land Reserve; however, entries in the past have had a consistent history of failure.

2. Grazing

Cattle are almost the exclusive livestock in this area. This is a contrast from the days when there were 160 bands of sheep in the Plush area alone. To the 55 licensees who have rights to graze on BLM controlled lands, the National Land Reserve is an integral part of their operations. Operations are large and generally in good economic condition.

The range is in poor condition; however, a large part is deteriorating and needs reduced stocking and management in order to recover and reach its potential production which is triple what is being produced now.

Moving sand dune areas have been stabilized and vegetated.

Poisonous plants and noxious weeds are invading and increasing.

Use is for a maximum of seven months. The critical season is in the spring and this is where larkspur is the range manager's friend as grazing is deferred until the larkspur seasonally dies or grass becomes more plentiful.

Range livestock use conflicts with wildlife for forage; but except in the Warner Valley there is little conflict between ranchers and recreationists.

3. Forestry

Between 2,000 and 3,000 acres of the National Land Reserve in this Master Unit is forest land. It is principally patches of Ponderosa pine on which a sanitation and salvage cut has been completed pending initiation of an intensive inventory planned for 1962. Replanting to replace timber destroyed by repeated fires is needed on much of this land. This is difficult because of dry conditions which result in low survival of the transplants. Insects are now reaching epidemic proportions. Access to timber sales is largely through National Forest land and is relatively easy.

Protection of practically all the acreage in this Master Unit is by force account crews. To manage the forest lands, cadastral surveys are needed to clear up a few questionable areas.

When the forest acreage is combined with that in the Fort Rock and Lost River Master Units, it is significant to the local economy and justifies intensive balanced use practices and capital investments.

4. Minerals

The uranium mining in this Master Unit was on National Forest or private land. There has been no examination under PL-167. Extensive prospecting with bulldozers on the National Land Reserve has created an erosion problem.

5. Water

In the southwest corner of the Master Unit, National Land Reserve maintains the quality of water coming from the National Forest. Of the remainder, the National Land Reserve is the sole source of water available for use.

6. Recreation and Wildlife

All the various recreational aspects and problems except winter sports mentioned in the economic factors, apply to the National Land Reserve. The National Forest takes the brunt of the deer hunters, but the remainder is on Bureau lands. Sites and facilities are undeveloped and the demand for use is increasing. Thirty campsites have been designated for development.

At least 1,000 miles of new service roads are needed to adequately open this Master Unit to public hunting and recreation. The low population of much of the area reduces gate and fence problems.

Other than the lack of facilities, the major problems affecting recreation are competition of wildlife with cattle for forage and camping near springs.

Commercial, Industrial and Urban Use

The only foreseeable demand for this type of use will be for service stations on the Winnemucca to the Sea Highway.

General Conclusions

1. Maximum production of high quality water from the National Land Reserve is necessary for the entire economy of this Master Unit.

2. There is a very significant demand for recreation on the National Land Reserve in this Master Unit. Development of service roads and sites is necessary to service this demand.

3. The economy of the range livestock industry is based upon spring, summer and fall use of the National Land Reserve. Much of the range is deteriorating and significant reductions in use and added capital investments are needed to bring it to its full potential.

4. Agricultural use and mining have little foreseeable significance on the National Land Reserve. However, if the price of uranium goes up BLM lands may be an important source.

5. The National Land Reserve provides habitat and forage for much of the game in this Master Unit.

6. The timber provided by the BLM is an important supplement to supplies obtained elsewhere. Problems in reforestation and road development need early attention.

7. An exchange with the state is needed to block and improve management practices on both ownerships.

8. There is a continuing need for secure public tenure and balanced use management on the National Land Reserve in this Master Unit.

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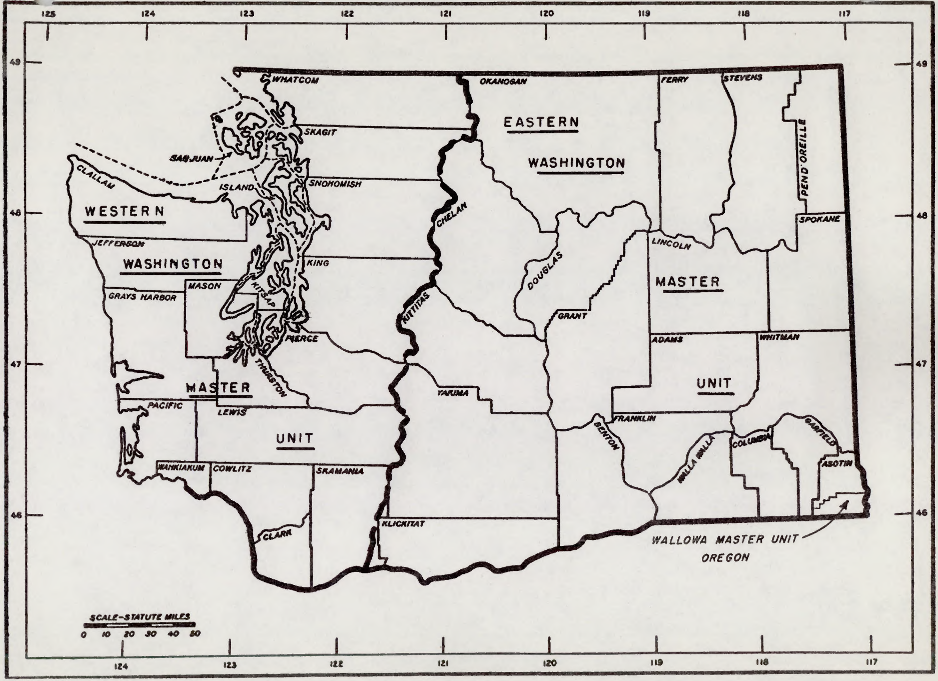
WASHINGTON,



268

SPOKANE

WESTERN WASHINGTON

IN REPLY REFER TO:

March 3, 1849

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Room 680, Bon Marche Building
Spokane 1, Washington

JUN 1961
RECEIVED

Em 6/23

102.2

June 21, 1961

Memorandum

To: State Director, Oregon

From: Officer in Charge, Spokane Field Group

Subject: Western Washington Master Unit No. 2

Herewith for your review, comments, and signature if acceptable, is our Classification study and analysis for our second Master Unit Plan for the State of Washington which embraces the western half of the State. The carbon copy with maps is for your retention and the original without maps is for return to us with approval.

The division line between the two units is the crest of the Cascade Mountain range which is also the division line between the counties lying in western Washington and those in eastern Washington.

Dennis E. Hess

Dennis E. Hess
Officer in Charge

Enclosures

WASHINGTON STATE MASTER UNIT CLASSIFICATION STUDY

Initial Analysis

Western Washington Master Unit No. 2

General

I. Location

This management area embraces the portion of Washington State lying west of the crest of the Cascade Mountain range which bisects the State. It is bounded on the west by the Pacific Ocean, on the south by the Columbia River, and on the north by the Canadian boundary. Due to geographic location and good harbors, this is considered the gateway to Alaska, Seattle being the main shipping center.

II. Economy

The economy of the area is influenced by the humid climate which influences rapid timber growth to provide raw material for major lumber, pulp, and paper industries. Proximity to the ocean and the Columbia River is the basis for an important fishing industry. Excellent harbors and abundance of raw materials stimulated the development of commerce and subsequently manufacturing as major industries. Cheap electric power has attracted several of America's major aluminum producing companies employing 6,700 people directly at an annual payroll of $42,600,000.00. The Pacific Northwest produces 28 percent of all aluminum manufactured in America. The State's economy is still principally as a "raw materials supplier" but in certain fields can support "market oriented" industries 4/.

A major industry of the State is the manufacture of airplanes. The Boeing Company at Seattle employs more than 60,000 people at a payroll of $350 million 1/.

Dairying constitutes the main agricultural endeavor in this area as well as food processing industries such as flour mills, baking companies, milk products, meat packing plants, berry production in Puyallup and Skagit valleys to sustain canning and frozen food plants 2/.

Rainier and Olympic National Parks, the Pacific Ocean, fine highways, magnificent scenery, ideal summer climate, beautiful cities, and extensive recreational facilities combine to make the tourist industry the fastest growing income producer in the state.

An abundance of natural resources plus ready accessibility by water brought early settlement to this part of the State west of the Cascades. Interest in the forest resource and the heavy railroad selections here left little public domain following creation of the National Parks and Forests. Thus today we find less than 20,000 acres of vacant public land remaining in this entire area, existing as small widely scattered parcels not suitable for any Federal land management program.

III. Population Pressures and Land Use

The most important factor here is the large number of big towns and cities providing a heavy population pressure both for expansion of residential living areas as well as recreational demands on the land. Nearly two million of the State's residents are found in this area. The largest city is Seattle with 580,000 people, followed by Tacoma with 160,000; Vancouver with 41,000; Bellingham with 37,000; Everett with 35,300; Bremerton with 28,400; Longview with 23,400; Aberdeen with 20,250; and Olympia with 17,700 1/. Due to continued migration to the Pacific Northwest, it is anticipated that there will be a population of 3,500,000 here by 1970 and 3,900,000 by 1975 4/.

The second factor influencing land values and use is the tremendous acreages of timber lands held as tree farms by the big lumber companies and pulp and paper combines, needed to insure a continuing supply of raw material to safeguard the tremendous investments in plant and merchandising facilities. For this reason there is a ready sale of cut-over timber land and marginal farm lands for replanting to timber. The annual payroll in the lumber industry exceeds $312 million 1/. Also favorable growth conditions and ready markets have stimulated development of an extensive Christmas tree farm industry and land suitable for this purpose sells at a premium.

For these reasons we find that the lands in this part of the State are under intensive management, either for residential and industrial use, recreation, agriculture, or timber production.

IV. Recreation

The diversity of climate and topography in this area provide an optimum of recreational opportunities. Puget Sound, the greatest inland salt water recreation area in the world, together with the Columbia River and thousands of fresh water lakes makes this the largest per capita small boat market in the nation 3/. Two hundred miles of ocean beaches and thousands of lakes and streams challenge the sportsman. The proximity and easy accessibility of extensive snowfields on the Cascade Mountains provide a winter sports season longer than any other area in the Country. Dry sunny summers with low humidity favor all out of door activities. Mt. Rainier and Olympic National Parks together with 49 State Parks, 16 major historical and geological areas, and 9 National Forests provide an abundance of opportunity for hiking, camping, picnicking, etc.

V. Characteristics of the Public Domain

The approximately 16,000 acres of public domain land remaining in this area may be divided into two categories. First are the small, scattered tracts of timber land in various stages of natural reforestation following burning, trespass logging in the early part of the Century, or timber sales by the Bureau of Land Management. In general they are isolated by the large forest holdings of private industry and State forest ownership, all being given a high degree of forest management and protection.

Secondly there are the fragments of public land being restored from Coast Guard and other withdrawals located on the ocean coastline or in the San Juan Island group. Primary value of this land of course is for recreational use even though the small size of some of the parcels limits the extent of potential development.

VI. Highest and Best Use of Public Domain

Washington leads all states in production of paper pulp in its 33 pulp mills indicating a large continuing demand for timber stumpage to sustain this phase of the economy. There are 38 plywood plants producing more than one-third the national output 1/. These, together with 190 shingle and shake mills, and many times larger number of lumber mills, makes the lumber industry the main bulwork of the economy. For this reason it is important that the suitable Bureau of Land Management lands in the area be maintained in sustained yield timber production. The State school lands are managed and protected by the State Department of Natural Resources by full time technically trained foresters as part of the State Forest system under a sustained yield timber management program. Accordingly the Bureau of Land Management lands in this area, other than ocean frontage and those having recreational values, are tentatively classified as suitable for State Indemnity Selection as part of a Bureau of Land Management program to satisfy the obligation to the State.

The 600 acres of public land ocean frontage on Leadbetter Point is classified as recreational land suitable for sale to the State Parks and Recreation Commission upon compliance with necessary requirements because as yet there are few public parks on the ocean and the demand from the public is heavy. The parcels of public land in the San Juan Islands and other coastal property is also classified for recreational use even though proper land tenure has not as yet been determined.

VII. Other Resource Values

a. Mineral

A small portion of the Bureau of Land Management area carries some values in low grade coal but attempts at commercial development have been abandoned due to the poor quality and lack of markets. Field examination will be needed to determine the existence of lead, zinc, copper, gold and limestone on limited areas of this Bureau of Land Management land. Over all, the mineral values are believed to be insignificant.

b. Wildlife

Although some use of the land is made by big game and other forms of wildlife, the small size of the individual tracts and relative inaccessibility to hunters renders it unimportant for wildlife.

c. Agriculture

Rough, broken topography and shallow rocky soils render the Bureau of Land Management land unfit for agricultural development. Rapid timber growth crowds out grass precluding grazing use of the land.

d. Water

The high precipitation and snow melt from the Cascade Range provides an abundant supply of water to the area so there is no problem in this regard.

e. Industrial and Urban Development

The public lands are far removed from population centers eliminating the need for industrial or urban development.

VIII. Conclusions

a. Although this Master Unit Plan covers 17 counties, it is proper to handle it as a single real estate management unit because there are only about 16,000 acres of Bureau of Land Management land in the entire area, and the conditions existing in all the counties are very similar.

b. In order to sustain the economy of the area the land should be maintained in sustained yield timber production which can best be accomplished under State ownership through State Indemnity Selection, except for lands having recreational values.

c. The Bureau of Land Management lands fronting on the Pacific Ocean and the various islands in Puget Sound and the San Juans are primarily valuable for recreational use and will be made available to proper State or local public agencies under the Recreation and Public Purposes Act for development.

d. The counties involved with acreages of public land are as follows:

County	Acres
Clallam	537
Clarke	320
Cowlitz	1,820
Grays Harbor	40
Jefferson	1,099
King	930
Kitsap	240
Lewis	1,345
Mason	320
Pacific	227
San Juan	623
Skagit	2,340
Skamania	1,990
Snohomish	1,520
Thurston	80
Wahkiakum	40
Whatcom	2,217

e. Classifications of the individual parcels of land in the above areas will be accomplished as expeditiously as the basic information on each tract can be acquired with a target date for completion by calendar year 1965.

Fremont W. Merewether

Fremont W. Merewether
Lands and Minerals Officer

Approved:

Officer in Charge

Date: 6-12-61

State Director

Date:

Bibliography

1. Facts About Washington State - State of Wash. Dept. of Commerce and Economic Development

2. State of Washington Economic Horizons - State of Wash. Dept. of Commerce and Economic Development

3. Washington State Industrial Handbook - State of Wash. Dept. of Commerce and Economic Development

4. Industrial Raw Materials Advisory Report - State of Wash. Dept. of Commerce and Economic Development

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Room 680, Bon Marche Building
Spokane 1, Washington

102.2

7/3

RECEIVED
JUL 1961
BUREAU OF LAND MANAGEMENT
PORTLAND, ORE.
STATE OFFICE

June 30, 1961

Memorandum

To: State Director

From: Officer in Charge, Spokane Field Group

Subject: Master Unit #1, Eastern Washington, Initial Analysis

Review of our Master Unit #1, Eastern Washington Master Unit, General, finds that data on mineral values is deficient and should be made available for the discussion at Denver.

Mineral reconnaissance has been completed on the following counties: Okanogan, Ferry, and Stevens. The acreages classified as mineral are as follows: Stevens - 7,000 acres; Ferry - 1,360 acres; and Okanogan - 5,560 acres. It is believed that the State Department of Game will desire to purchase this land under the Recreation and Public Purposes Act, the sale being subject to valid existing mineral entries.

There are less than 100 acres of National Land Reserve in Pend Oreille County, and the Powersite lands along the Pend Oreille River are being classified for recreation and public purposes.

For these reasons we feel we have no major problem with mineral lands in Master Unit #1, Eastern Washington, inasmuch as these lands have been quite well identified and the State Department of Game is eager to acquire such land.

Dennis E. Hess

Dennis E. Hess
Officer in Charge

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Room 680, Bon Marche Building
Spokane 1, Washington

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JUN 1961
BUREAU OF LAND MANAGEMENT
PORTLAND, ORE.
STATE OFFICE

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102.2

7/3

June 28, 1961

Memorandum

To: State Director, Oregon - Attn: Roger Oscarson

From: Officer in Charge, Spokane Field Group

Subject: Master Unit Classification #1 - Eastern Washington

Enclosed is a copy of our Master Unit Classification #1 which is a duplicate of copies sent to both the Area and the Director's Office by our memo of April 10, responding to the Director's memo of March 28 (5:04e:0), proposed Manual Release Lands Inventory Program.

Dennis E. Hess
Dennis E. Hess
Officer in Charge

Enclosure

EASTERN WASHINGTON

WASHINGTON STATE MASTER UNIT CLASSIFICATION STUDY

Initial Analysis

Eastern Washington Master Unit #1

General

I. Introduction

Because of the basic similarity of all the Bureau of Land Management lands in eastern Washington, totaling around 300,000 acres, and the fact that the problems of management are much the same, the entire part of the State east of the Cascade Mountain Range has been chosen as a Master Unit. This area embraces 19 counties which contain public lands, each of which will be described separately as Real Estate Management areas and given priority for classification action in the order of their listing. The priorities given the units reflect both the weight of pending private applications and entries plus an effort to make the best use of recently accomplished field work. The areas having the least inherent value for public or multiple use are listed for initial action as a matter of expediency.

Since the entire area is so closely related as to physical, climatic, and economic features, it will be discussed as a whole then individual differences spelled out under the area descriptions.

II. Location and Accessibility

This area is bounded by the Cascade Mountain range on the west, the Canadian border to the north, the State of Oregon to the south, and the State of Idaho on the east. It embraces three major land types: the flat and arid Columbia basin plateau, the rich Palouse dry farm country in the southeast, and the Okanogan Highlands crossing the north part of the area and phasing into the Selkirk Mountains to the east. The predominant feature of this land mass is the extensive Columbia Basin plateau which is split by the Columbia River whose waters provide the magic touch as a tremendous resource providing electric power, navigation, and recreation, and water for irrigation.

The area is well serviced by numerous State and Federal highways as well as four major transcontinental railroads, providing a total of 5,830 miles of railroad in the State. Barge trafficeon the Columbia River is gaining major proportions as an outlet to the ocean ports for grain and other produce from the Inland Empire. Two petroleum product pipelines service the area and provide cheap power, one natural gas pipeline and one for liquid petroleum.

Whereas the Columbia River enters the State on the north from Canada in the northeast corner and makes a big bend in traversing the area to become the south boundary of the State, the Snake River is the major tributary thereto crossing the southern part of the State into Idaho. Completion of several dam projects on the Snake River will provide water traffic to Clarkston, Washington and Lewiston, Idaho thus providing cheap traffic for the mineral and lumber products of this area.

The Columbia Basin plateau lies 2,000 feet above the Columbia River and having no natural streams or water was of little value until construction of Grand Coulee Dam and the Columbia Basin irrigation project.

III. Climate

Climate of the Columbia Basin plateau is arid, averaging from 6 to 10 inches of annual precipitation which comes mostly during the winter months. Although winters are cold, the summers are warm with a 166-day average growing season. Lands not susceptible to irrigation have little value, providing rather scant forage for grazing livestock.

The only vacant public lands in the Palouse area are found on the breaks of the Snake River or other rough land and are useful only for livestock grazing.

The Bureau of Land Management lands found in the Okanogan Highlands reflect the greater amount of precipitation from 9 to 20 inches as evidenced by scattering to good stands of fir and pine timber. Here the winters are colder and summers shorter, restricting the type of crops that can be grown.

IV. Soils /1

The entire area is underlain by a thick bed of basalt with soil cover varying from deep silt loams in the Palouse Country and silty sands in the Basin to shallow rocky soils in the Okanogan Highlands. There are a tremendous number of soil types, but the Bureau of Land Management lands are restricted to the shallow rocky soils and waste lands.

V. Population Trends and Forecasts /2

The Bureau of Reclamation Columbia Basin Irrigation Project is the greatest single factor influencing population growth in the area. It embraces an area 80 miles long by 60 miles wide, totaling 2,500,000 acres. Of this 1,029,000 acres have been found suitable for irrigation. The current program of development will bring under irrigation 455,000 acres of new land by 1963, comprising 5,524 new farms. Farm units average in size from 40 to 140 acres of irrigated lands as compared to 1,280 acres minimum size of dry farm operation. Hence population growth is inevitable as the new farm units are made available and the necessary service facilities develop.

New hydroelectric dams are being built on the Columbia and Snake Rivers at a tremendous rate, providing an abundance of low cost power as an inducement to new industries. Aside from the aluminum plants at Spokane and Wenatchee, new industries have not shown much interest in the area due in part to the limited labor supply plus the shortage of raw materials and immediate market. Hence only small developments such as additional sugar factories and fertilizer plants are contemplated in the near future, and only locally available labor will be needed.

Although both the lumbering and mineral industries are important in the Okanogan Highlands, no expansion thereof is anticipated except in case of a national emergency.

The population of Grant County has nearly doubled during the past ten years, and other counties included in the irrigation project have also shown sharp increases. However, most of the counties in eastern Washington show population losses during the past ten years due in no small measure to the consolidation of dry farm ranches and livestock operations in efforts to cut down overhead and reduce operating costs.

VI. Agriculture [2]

Lands in the Columbia Basin Irrigation project are physically and climatically suited to a wide range of crops, including alfalfa, clover, corn, sugar beets, potatoes, mint, onions, field seed crops, apricots, peaches, apples, grapes, as well as livestock, dairying, and poultry. The abundance of cull potatoes and sugar beet pulp has made livestock feeding a profitable new industry. More than 20 different crops are raised each having an annual farm value of more than four million dollars.

Summer fallow dry farming accounts for the most extensive acreage under cultivation in the Inland Empire with wheat crop yields of from 10 to 60 bushels per acre. Because of Government acreage restrictions, fertilization of grain crops to increase yields has become a common practice. Hence wheat is found to be the leading crop in the State with an annual value between 125 and 150 million dollars, making Washington one of the six leading wheat producing states. [3]

The Okanogan Highlands offers the most diversified situation of those considered. The low terrace benches along the Yakima, Naches, Columbia, and Okanogan Rivers provide ideal sites for orchards, hence soft fruits, apples, and pears are of major importance in this area. Washington leads the United States in the production of apples, providing about one-fourth the commercial apples grown in America with a value of from 75 to 85 million.

Here we find extensive areas of arid sagebrush lands and rough and mountainous timber lands ideally suited for livestock range which is the basis for a great many rather prosperous cattle ranchers. Hence we find livestock ranking fourth among the State's agricultural products. For this reason most of the Bureau of Land Management land is under grazing lease.

VII. Minerals - /3

From 1853 to 1957 about a billion and a half dollars worth of minerals were mined in Washington. Metallic minerals have been in a serious slump since the end of the Korean War and no upturn is anticipated in view of foreign competition. The fact that most of the readily accessible deposits have been mined out is probably a contributing factor to this condition. Ferry, Stevens, and Pend Oreille Counties were the major producers of metallics, hence the economics of these places has been the most seriously affected. A recent mineral reconnaissance of Bureau of Land Management lands in Stevens County resulted in a classification of ten percent of it being mineral in character.

The greatest current and prospective mineral values now are found in the industrial minerals such as limestone, silica, magnesite, coal, sand and gravel, and clay. A 14 million dollar cement plant is soon to be built on limestone claims to be patented from Bureau of Land Management lands near Clarkston, Washington. The average current limestone production is valued at $530,000.00. Washington leads the U. S. in production of magnesite, having shipped 38 million dollars worth since 1916. The greatest value of all is that derived from sand and gravel operations, exceeding 20 million dollars annually. /4 The Bureau of Land Management has been involved very little in sales of such.

VIII. Timber Resource /3

There are 10.5 million acres of forests in eastern Washington. Ponderosa pine is the most valuable tree due to its soft texture which makes it valuable for millwork, sash and doors, etc., where easy workability is more important than tensile strength. It is found on semi-arid sites whereas good stands of Douglas fir, larch, spruce, and cedar are found where moisture conditions are more favorable. Both the mineral lands and forest lands are found in the mountainous northern part of the State, hence conflicting uses often arise on the Bureau of Land Management lands between mineral locators and the loggers. A total of 191,000 acres of Bureau of Land Management lands in this area are forested having an estimated value of $14,325,000.00.

IX. Recreation /3

The transit industry is perhaps the fastest growing income producer in the State. An estimated 4 million visitors in 1958 spent approximately $330,000,000.00, yielding about $13,500,000.00 in taxes to the State. Hence the tourist industry now stands fourth of importance next to agriculture in the economy. Here are found two National Parks, nine National Forests, and 63 well developed State Parks. Grand Coulee and other major dams on the Columbia River, excellent highways, ideal summer climate, ample recreational facilities, hundreds of beautiful lakes,

good hunting and fishing, and magnificient mountain scenery all combine to attract visitors. The progressive attitude and cooperation of both the State Parks and Recreation Commission and the State Department of Game makes possible transfer of suitable BLM lands to these agencies for development and assured availability to the public.

X. Characteristics of the Public Domain /3

There are 9,688,940 acres of Forest Service lands surrounding the Public Domain tracts; as well as 1,136,856 acres in National Parks, 407,028 acres in Reclamation withdrawals, and 108,282 acres in Fish and Wildlife withdrawls. Hence the 350,000 acres Public Domain lands remaining appears of little consequence on a comparative basis. The vacant public lands are found as small, isolated parcels surrounded by privately owned land and seldom having public access. The vacant land may be divided into two classes; the arid grazing lands in the southern part of the state and the higher value timber and mineral lands in the mountainous country of the Okanogan Highlands. Because of the limited possibilities for multiple use on public management, the arid grazing lands will be given first priority in the Real Estate Management Areas set up for sale or other disposal. The classification areas will be set up on a county basis to facilitate both the appraised work as well as the Land Office operations for lands classified for sale. The use of the basic resources on these lands will be described under the following area unit discussions attached hereto in the following sequence.

Real Estate Management Area	Pending Land Applications
1. Yakima County	8
2. Benton Co.	7
3. Grant Co.	8
4. Douglas Co.	5
5. Kittitas Co.	7
6. Lincoln Co.	1
7. Adams Co.	1
8. Franklin Co.	1
9. Walla Walla Co.	2
10. Columbia Co.	1
11. Garfield Co.	0
12. Asotin Co.	0
13. Whitman Co.	0
14. Pend Oreille Co.	5
15. Ferry Co.	16
16. Chelan Co.	11
17. Stevens Co.	50
18. Okanogan Co.	29
19. Klickitat Co.	7

Bibliography

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1. "Soil Survey of The Columbia Basin Area Washington", A. T. Strahorn, Bureau of Chemistry and Soils, U.S.D.A.
2. "Basic Information on a Growing Area, Grant Co., Washington", by Grant Co. Resources Committee 1959.
3. "Facts About Washington State", Washington State Department of Commerce and Economic Development, 1959.
4. "Mineral Facts and Problems", U. S. Bureau of Mines, 1960.

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